Excavating Engineer

founded 1905

JUNE

1957

A giant 2,400-ton stripping shovel recently went into operation uncovering bituminous coal in the new River Queen mine near Central City, Ky. Owned jointly by W. G. Duncan Coal Co. and Peabody Coal Co., the stripper is taller than a 13-story building and is equipped with a 55-yd. dipper. Note size of the pickup truck near machine's crawlers. An illustrated feature article begins on page 32.

"We Use It—We Choose It Again"

...SAY 47% OF 1956 HYDROCRANE BUYERS

IT has happened again. The number of happy Hydrocrane owners who return to trade in an old Hydrocrane, or add a second, third and, in some cases, a fifth or sixth Hydrocrane — continues to grow year after year. Here is the record:

	1954	1955	*1956*
Per cent of repeat orders:	38.6%	43.8%	47%

What's more — the total number of machines sold to these 1956 repeat buyers was more than double the 1955 figure. Why? Let's look at the facts:

Hydrocranes have plenty of power and reach. Available in two models, either 5- or 10-ton rated capacity, they offer hydraulic telescoping booms with up to 50 feet of reach.

Hydrocranes are lightweight, compact and fast. All-hydraulic design eliminates hundreds of parts, permits mounting on a conventional truck. This makes Hydrocranes fast over the highways, maneuverable in traffic and a "squeeze-in specialist" on those close-quarter jobs.

If you are not now reaping Hydrocrane profits, take a tip from the growing group of satisfied owners who return again and again for *additional* Hydrocranes. See your Bucyrus-Erie Hydrocrane distributor for details.

175H57C

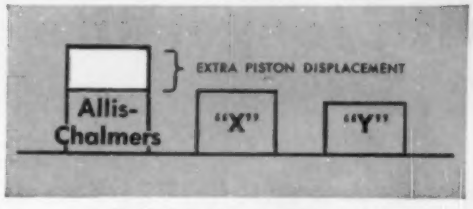
Bucyrus-Erie Company • South Milwaukee, Wisconsin

ALLIS-CHALMERS DIESELS OFFER

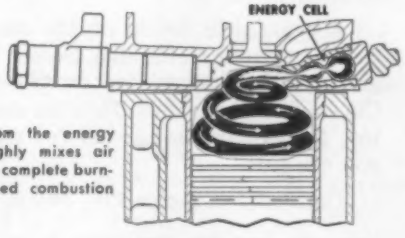
more USABLE power for your equipment

more PROFIT for you

You have a new kind of engine performance with Allis-Chalmers diesels. Their big piston displacement gives you greater reserve power, higher usable torque in the normal operating range. Their unique "follow-through" combustion results in highly efficient burning — builds up compression pressure slowly, sustains it over a longer period. Result: more *usable* power.



Allis-Chalmers' big piston displacement gives you extra usable power.



A blast from the energy cell thoroughly mixes air and fuel for complete burning, sustained combustion pressures.

Equipment must be *working* to be *earning* — Allis-Chalmers engines earn more because they are on the job working more. Rugged, simple construction, with fewer parts, means a minimum of maintenance. Get the complete story of why Allis-Chalmers engines give you more usable power, more profit. See your Allis-Chalmers engine dealer.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

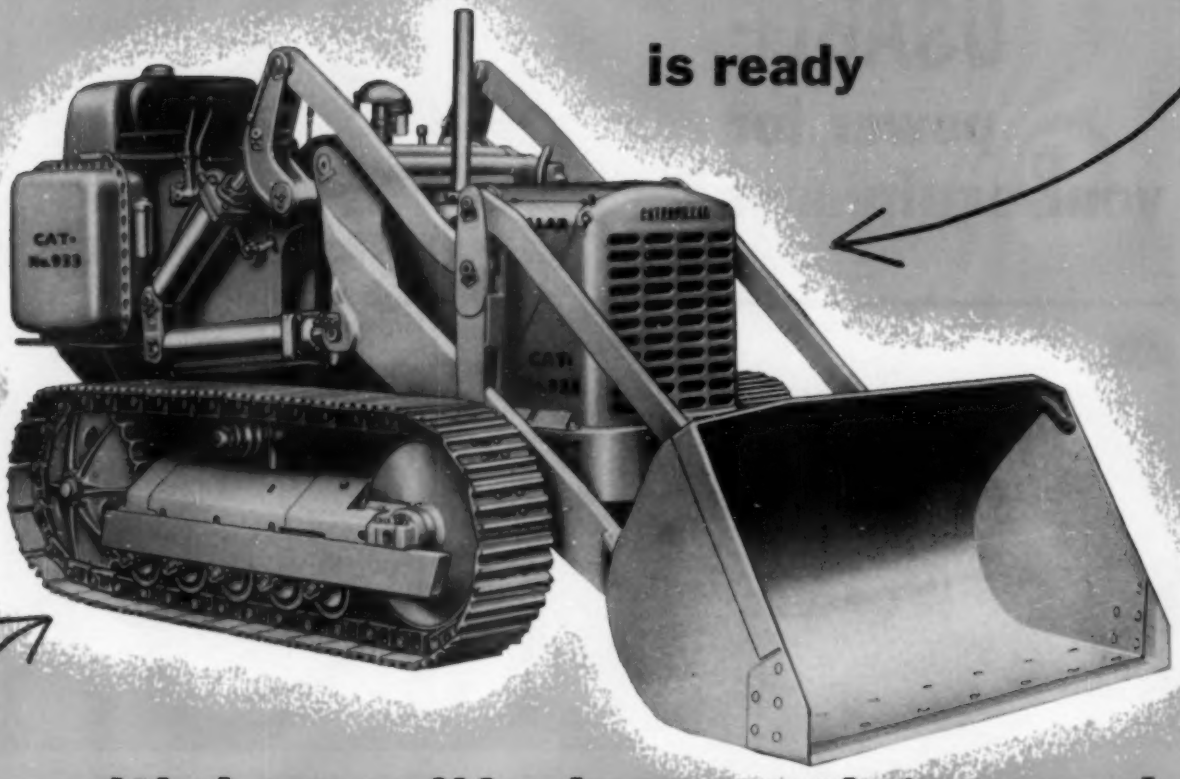
ALLIS-CHALMERS

BE-9A

ANNOUNCEMENT! The new, improved

No. 933 (Series E) TRAXCAVATOR*

is ready



with longer life, lower maintenance!

Looks a lot like the popular No. 933 you already know—but there's greater stability, performance and durability built into this new Series E!

Now the rugged CAT* No. 933 Traxcavator includes a new heavy-duty undercarriage with:

- New Rugged Track Roller Frame
- New Solid Sprockets
- New Heavier Idlers
- New Tough Track Rollers

The complete line of Cat-built Traxcavators	No. 977	No. 955	New No. 933 (Series E)
Flywheel HP at sea level	100	70	50
Bucket capacity, cu. yd.	2¼	1½	1
Bucket tip-back at ground level	40°	40°	40°
Bucket tip-back at maximum lift	46½°	47½°	48°
Dumping height (center of hinge pin to ground)	141½"	128"	119⅛"

The easy operation, the great capacity and the dependable power—these features remain as outstanding as before.

For complete details on this *tough* new Traxcavator, call your Caterpillar Dealer. He'll be glad to give you full information on the complete line of Cat-built Traxcavators. He's the man to remember, too, for expert service and for replacement parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

ONE GOAL: To concentrate our capabilities, resources and experience on the design, manufacture, distribution and service of job-tested heavy equipment.

Advertisers

IN THIS ISSUE

Allis-Chalmers Mfg. Co. 1, 55, 77
American Brake Shoe Co.,
American Manganese Steel Div. ... 4
American Manganese Steel Div.,
American Brake Shoe Co. 4
American Steel & Wire Div.,
U. S. Steel Corp. 14–15
Autocar Div., White Motor Co. ... 42–43
Aveling-Barford Ltd. 12
Bucyrus-Erie
Co. ... 2nd Cover, 16, 20–21, 53, 66, 78
Buda Div., Allis-Chalmers Mfg. Co. ... 1
Caterpillar Tractor
Co. ..... 2, 41, 48–49, 69, 4th Cover
Columbia-Geneva Steel Div.,
U. S. Steel Corp. 14–15
Contractor's School 46
Crosby-Laughlin-Lebus 45
Drake-Williams Mount 82
Eimco Corp., The 80
Electric Steel Foundry Co. 17, 18
Euclid Div.,
General Motors Corp. 19, 51
For Sale (Classified) 81, 82
General Motors Corp.,
Euclid Div. 19, 51
Harnischfeger Corp. 64–65
Hayward Co., The 76
Hendrix Mfg. Co. 58
Hercules Powder Co. 67
Hough Co., The Frank G. 10–11
Ingersoll-Rand Co. 44
International Harvester
Co. 6–7, 8–9, 74–75
Kiesler, Jos. F. Co. 54
LeTourneau-Westinghouse
Co. 57, 59, 61, 63
Mack Trucks, Inc. ..... 3rd Cover
Macwhyte Co. 47
Mobile Office, Inc. 52
New Jersey Drilling Co., Inc. 50
Northwest Engineering Co. 5
Owen Bucket Co., The 71
Phoenix Products Co. 60
Robeson Preservo Co. 79
Rogers Bros. Corp. 62
Sauerman Bros., Inc. 56
Tennessee Coal & Iron Div.,
U. S. Steel Corp. 14–15
Timken Roller Bearing Co., The 13
United States Steel Corp. 14–15
United States Steel Export Co. 14–15
White Motor Co., Autocar Div. ... 42–43

Excavating Engineer

founded 1908

South Milwaukee, Wisconsin

CONTENTS

Volume 51 No. 6 **June 1957**

Clear Rocky Path for California Pipeline—by Ray Day 22
Rugged mountain range between take-off and terminal points of natural gas line made ditching and pipelaying task in California difficult and interesting for Engineers Ltd. Pipeline Co.

Contractors Fight Mud on Alcoa Plant Job 28
When a million yards of dirt went into mud, Fruin-Colnon Contracting Co. had to send quickly for draglines to complete grading 350-acre site for aluminum smelter, power plant.

Unveil Giant Coal Stripper 32
Formal showing of new 55-yd. stripping shovel is held at River Queen Mine, Central City, Ky., for press and special guests. Machine, weighing 2,400 tons, uncovers two seams of coal.

Plywood Panels Speed Trench Work 34
Contractor adopts safe shoring system using 4x8-ft. panels of ⅝-in. plywood.

Variety Keeps Salem Firm Busy—by Floyd Suter Bixby 35
Sand and gravel producer in Oregon develops construction division that ties in well with available equipment and personnel. A half dozen utilities jobs are often active simultaneously.

Mexico's Mountain of Iron—by Mary Saint Albans 38
After four centuries, modern equipment replaces picks and burros at Cerro de Mercado.

News from the Field 40

Alaska Corps is Busy 40
Little New B-E Chairman 40
Johnson Heads Moles 45
Engineering Course 40
AMC Meeting Set 40

Equipment You Ought to Know About 46

Not in the Contract 68

New Trade Literature 76

Notes from the Manufacturers 79

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How a midwest steel producer
TRIPLED TRACTOR-SHOE LIFE

It's "tough-going" in a slag pit! Heavy loads, the grinding impact of abrasive rock and metal, really put tractor shoes to the test. And that's exactly what this steel producer did.

Amsco® cast Manganese Steel Tractor Shoes were installed in place of rolled shoes. The result: *a 3-time increase in service life.* While rolled shoes had previously been replaced after one season's service, the Amsco pads lasted nearly *3½ years—a total of 3374 service hours.*

Here's further proof that Amsco Manganese Steel—"the toughest steel known"—can save you money and replacement time wherever severe impact and abrasion are a problem. Call your nearest Amsco representative, or write us direct, for further information on Amsco Tractor Shoes.

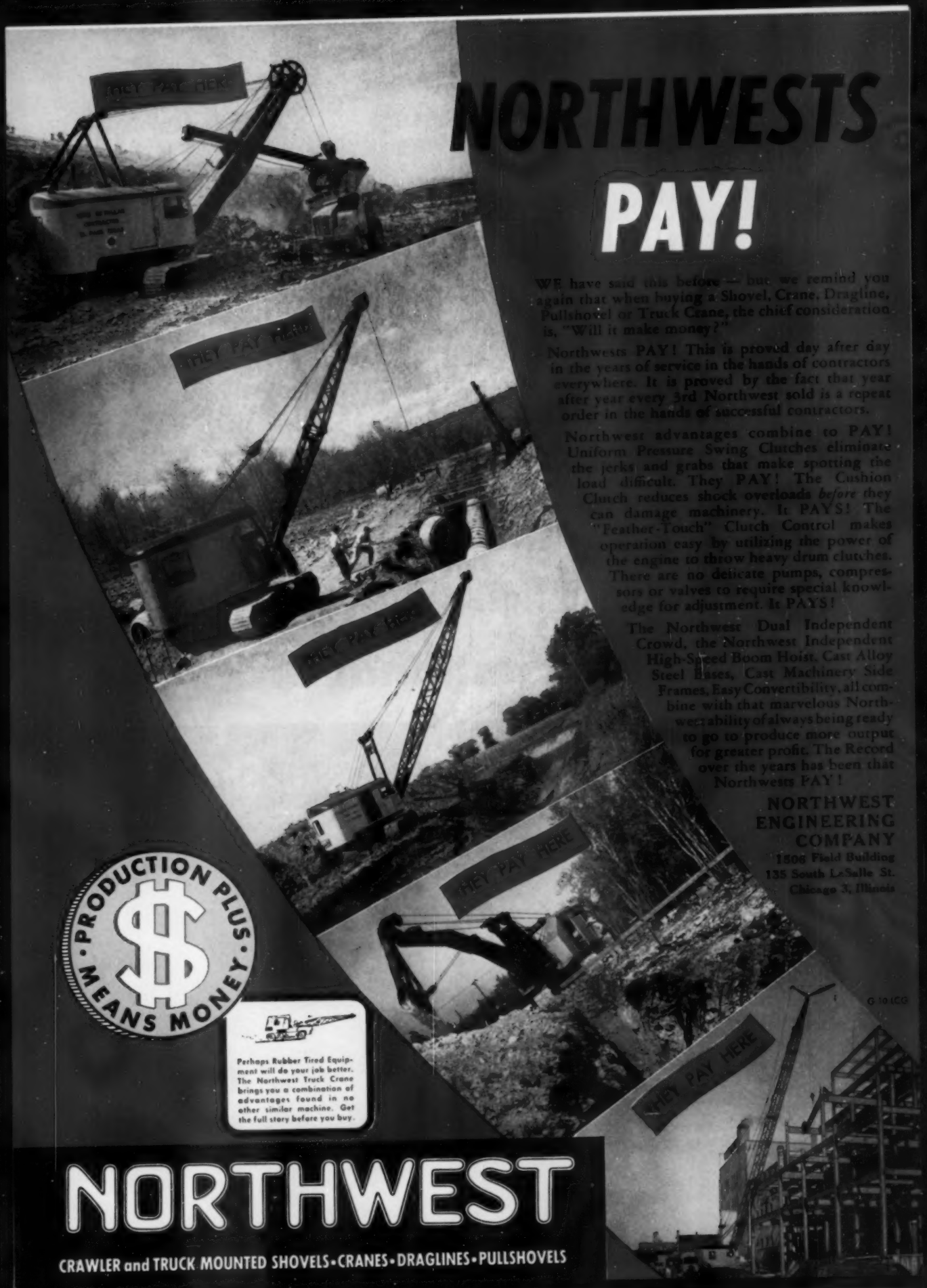
Amsco Manganese Steel Tractor Shoes
In addition to excellent impact and abrasion resistance, Amsco Tractor Shoes have countersunk bolts. This means less wear on bolts, often saves bolt-replacement when changing pads.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS; JOLIETTE, QUEBEC



NORTHWESTS PAY!

WE have said this before — but we remind you again that when buying a Shovel, Crane, Dragline, Pullshovel or Truck Crane, the chief consideration is, "Will it make money?"

Northwests PAY! This is proved day after day in the years of service in the hands of contractors everywhere. It is proved by the fact that year after year every 3rd Northwest sold is a repeat order in the hands of successful contractors.

Northwest advantages combine to PAY! Uniform Pressure Swing Clutches eliminate the jerks and grabs that make spotting the load difficult. They PAY! The Cushion Clutch reduces shock overloads *before* they can damage machinery. It PAYS! The "Feather-Touch" Clutch Control makes operation easy by utilizing the power of the engine to throw heavy drum clutches. There are no delicate pumps, compressors or valves to require special knowledge for adjustment. It PAYS!

The Northwest Dual Independent Crowd, the Northwest Independent High-Speed Boom Hoist, Cast Alloy Steel Bases, Cast Machinery Side Frames, Easy Convertibility, all combine with that marvelous Northwestability of always being ready to go to produce more output for greater profit. The Record over the years has been that Northwests PAY!

NORTHWEST ENGINEERING COMPANY
1506 Field Building
135 South LaSalle St.
Chicago 3, Illinois

G 10 ICG

PRODUCTION PLUS · MEANS MONEY ·

Perhaps Rubber Tired Equipment will do your job better. The Northwest Truck Crane brings you a combination of advantages found in no other similar machine. Get the full story before you buy.

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Four-for

ONLY YOUR International distributor *can make this deal:*

Buy your job-sized 4-In-1 on tracks or rubber from a complete line of profit-producing rigs.

Now—why tie-up useful money or "strap" your credit by "over-equipping"? Why spend upwards of four times as much for several limited-duty machines which one 4-In-1 can replace—and outproduce?

An International Drott 4-In-1 gives you 4-machine usefulness for one moderate investment. Yes, the exclusive and revolutionary 4-In-1 gives you instant availability of 4 big-capacity machine actions!

You get world-beating Skid-Shovel excavating-

All-in-1 International Drott 4-In-1

"Carry-type scraper"

with "see-easiness" of front-mounting—to grade, strip, spread, or compact with amazing, inch-close accuracy!

Skid-Shovel...

with Drott's exclusive, "concrete-smashing," triple-power pry-action break-out—and 42° ground-level bucket roll-back!

machine job-capacity
One-machine price!

loading performance. You get exclusive multi-purpose "carry-type scraper" action. You get production-boosting clamshell action. You get "radius-controlled" bulldozer action with big-yardage earth-rolling ability!

You get 4-In-1 versatility unlimited for a fraction of the price of the machines it can replace and outperform, on job after profitable job!

And you can have 4-In-1 advantages teamed with all-condition International crawler traction, or rubber-tired Hough Payloader speed!

See your International Distributor—he's the only one who can offer you a 4-In-1 deal! He's the only one who can save you the thousands of dollars that 4-In-1 ownership assures—by giving 4-machine utility for one moderate investment. And he can prove the "heap of difference" in 4-In-1 performance on tracks or rubber—against anything else in the field! See him soon for a demonstration!

gives you...

Clamshell...

that "surrounds" loose materials and fills in one fast gulp—gives you "hopper-high," self-cleanout dumping action.

Bulldozer...

with clam lip up, and skid shoes on the ground, the radius-controlled blade rolls the earth with precision!

ONLY YOUR International distributor CAN OFFER THESE EXCLUSIVE FEATURES!

Here's job-range.

Exclusive triple-power pry-action break-out

Inbuilt ability to deliver tremendous excavating force enables this TD-9 4-In-1 to yank out deeply embedded old masonry piers. You see typical, on-the-job advantages of true and exclusive International Drott pry-over-shoe break-out action—the only design that gives you the three absolute essentials: (1) Full hydraulic power transfer from full piston-face power-push; (2) Long lever to apply full pry-power; (3) Fixed fulcrum of frame-mounted skid-shoes, to concentrate pry-force!

Exclusive parallelogram raise action

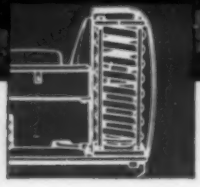
No eccentric tipping to cause spill-back and lose yardage! The 4-In-1 has non-spill, roll-back level—all the way up. Compared to ordinary front-end loader performance, this feature, alone, can increase your daily yardage up to 18%! You can bottom-dump the 4-In-1 as a clamshell...and do it 2½-foot higher than ordinary roll-forward buckets. And bottom dumping eliminates the sticky materials problem—where other rigs foul up and can't get the job done!

Check these other famous International Drott Exclusives!

- **STANDARD EQUIPMENT.** Three-valve design, to provide hydraulic control power for attachments.
- **STANDARD EQUIPMENT.** Double-bottom, bridge-truss bucket to insure 4-In-1 strength to match pry-action.
- **STANDARD EQUIPMENT.** Yoke-type supports to insure linkage strength to back 4-In-1 capacity!
- **STANDARD EQUIPMENT.** Magnetized dip stick to prevent damage to hydraulic system from minute abrasives!

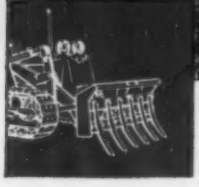
Only your International Distributor can offer you the big money-making advantages of International Drott exclusive 4-In-1 features. Only he can deliver you job versatility unlimited, in the world's only multi-purpose machine of its type! Prove to yourself that your correct size of 4-In-1 can replace and outperform a whole machinery yard full of limited-duty rigs. Ask for a demonstration!

where 4-in-1 gets world-beating . capacity... stay-put performance!



Exclusive shock-swallowing Hydro-Spring

Capacity-boosting, machine-protecting Hydro-Spring is a hydraulic cylinder enclosed in a heavy-duty locomotive-type coil spring. Shock force displaces oil from main lift cylinders into the Hydro-Spring cylinder—extending it and compressing the big spring to absorb and cushion impact loads. Slamming the 4-In-1 bucket into hard material—'dozing frozen ground—dumping rock with a bang—you never worry! Hydro-Spring gentles trouble-causing forces by two-thirds or more—practically eliminates hydraulic hose failures!



Complete line of attachments

Job-getting, money-making attachments built for specialized duty, provide tree-grubbing, boulder-bucking, log-loading performance available only from International Drott equipment! Grubber Blade attachment, used in place of the 4-In-1, is shown applying the tremendous force of pry-action break-out—to uproot a tough old oak tree. Other special attachments built to extend International Drott advantages to other fields include: Rock Forks, Skid-Grapples®, Bulldozer and Bullangledozer blades!

CHOOSE FROM

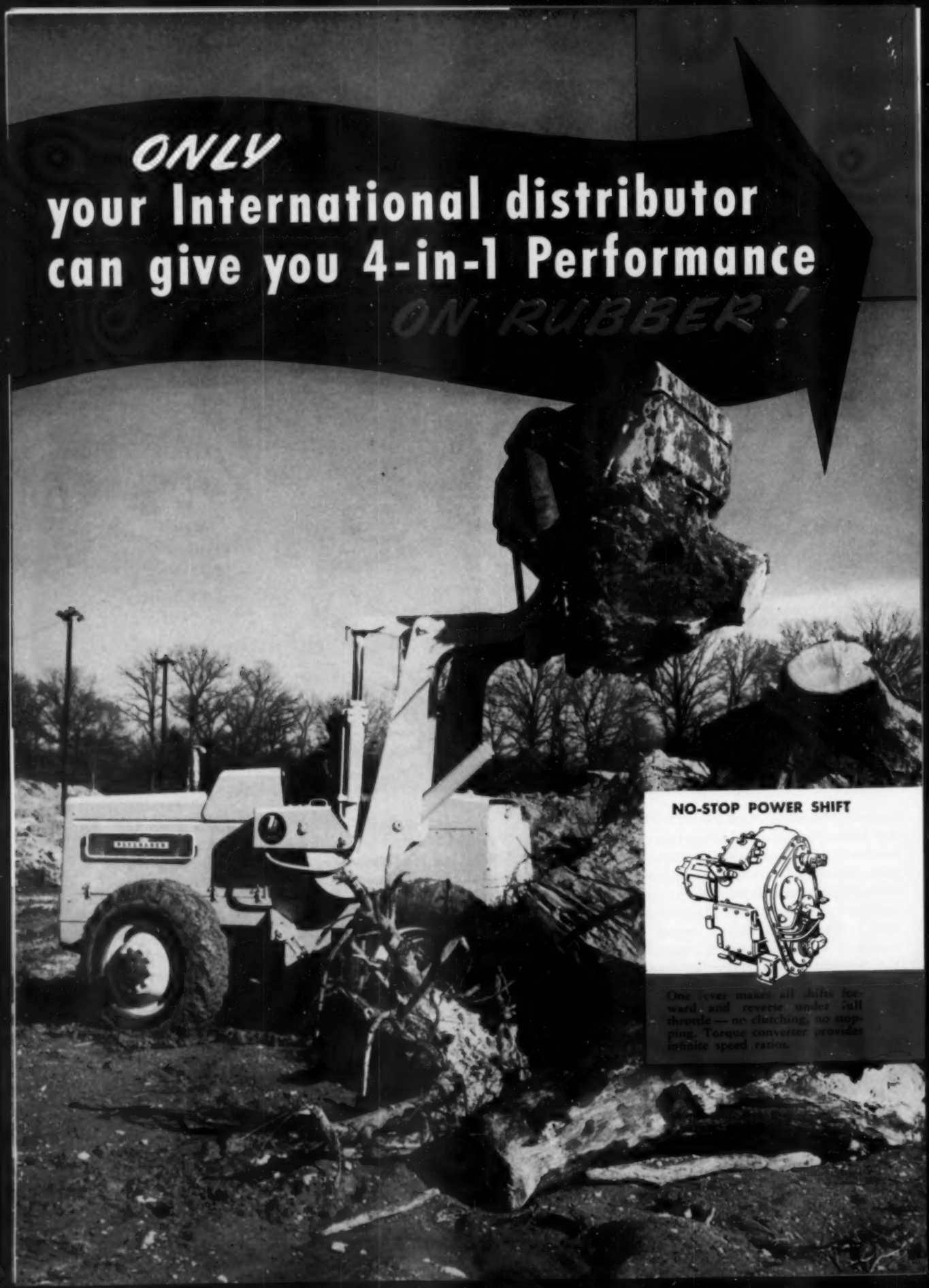
four 4-in-1 sizes

TRACTOR SIZE	4-IN-1 CAPACITY
TD-6	1-YARD
TD-9	1½-YARD
TD-14	2¼-YARD
TD-18	3-YARD

International Harvester Company, 180 N. Michigan Ave., Chicago 1, Ill.
Drott Manufacturing Corp., 3126 South 27th St., Milwaukee 15, Wis.

INTERNATIONAL HARVESTER

INTERNATIONAL® DROTT®


ONLY
your International distributor
can give you 4-in-1 Performance
ON RUBBER!
NO-STOP POWER SHIFT
One lever makes all shifts forward and reverse under full throttle — no clutching, no stopping. Torque converter provides infinite speed ratios.

PAYLOADER® mobility

PLUS four-machine utility

The only rubber-tired tractor-shovels available with Drott 4-in-1 buckets

Now you get even more tractor-shovel performance when you buy a "PAYLOADER". Equipped with a Drott 4-in-1 bucket, your "PAYLOADER" can handle many jobs that other wheeled tractor-shovels can't touch . . . perform shovel, clamshell, scraper or bulldozer work that would otherwise require several separate machines.

With a Drott 4-in-1 on a "PAYLOADER" you also get:

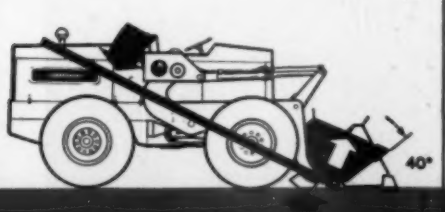
MOBILITY — quick-to-job travel over streets or highways under its own power . . . ability to work on or off paved surfaces.

MANEUVERABILITY — easy operation and fast loading cycles because of responsive rear-wheel power steering, "no-stop" finger-tip power shifting, dependable 4-wheel power brakes.

BALANCE AND STABILITY — long wheelbase . . . hydraulic load-shock-absorber . . . low, close bucket-carry position, all contribute to the easier riding qualities, the higher carrying speeds and the unusual balance that are outstanding "PAYLOADER" operating advantages.

TRACTION AND DIGGING POWER — exclusive power-transfer differentials, planetary final drives and the powerful pry-out bucket digging action help these "PAYLOADER" units to outperform other tractor-shovels of comparable size. Your International Distributor is anxious to demonstrate what these "PAYLOADER" tractor-shovels with a Drott 4-in-1 bucket can do for you. Ask him about the "PAYLOADER" Deferred Payment Plan.

PRY-OUT DIGGING ACTION

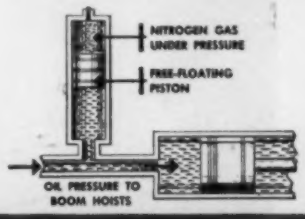


Exclusive "PAYLOADER" bucket action combines a powerful prying force over "break-out" pads, with 40° bucket tip-back at ground level to get heaped loads into bucket quickly and easily.

POWER-TRANSFER DIFFERENTIALS

These special differentials give better traction under all conditions — automatically deliver 25% more power to the wheels with the better traction.

LOAD SHOCK ABSORBER



This important device is a part of the hydraulic system. It cushions the loaded bucket, smooths the ride, permits faster carrying speeds, reduces spillage, boosts production.

All three sizes of 4-wheel-drive "PAYLOADER" tractor-shovels, models HU, HH and HO, are available with Drott 4-in-1 buckets, sizes 1, 1½ and 2¼ cu. yd. respectively.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
708 Sunnyside Ave., Libertyville, Ill.

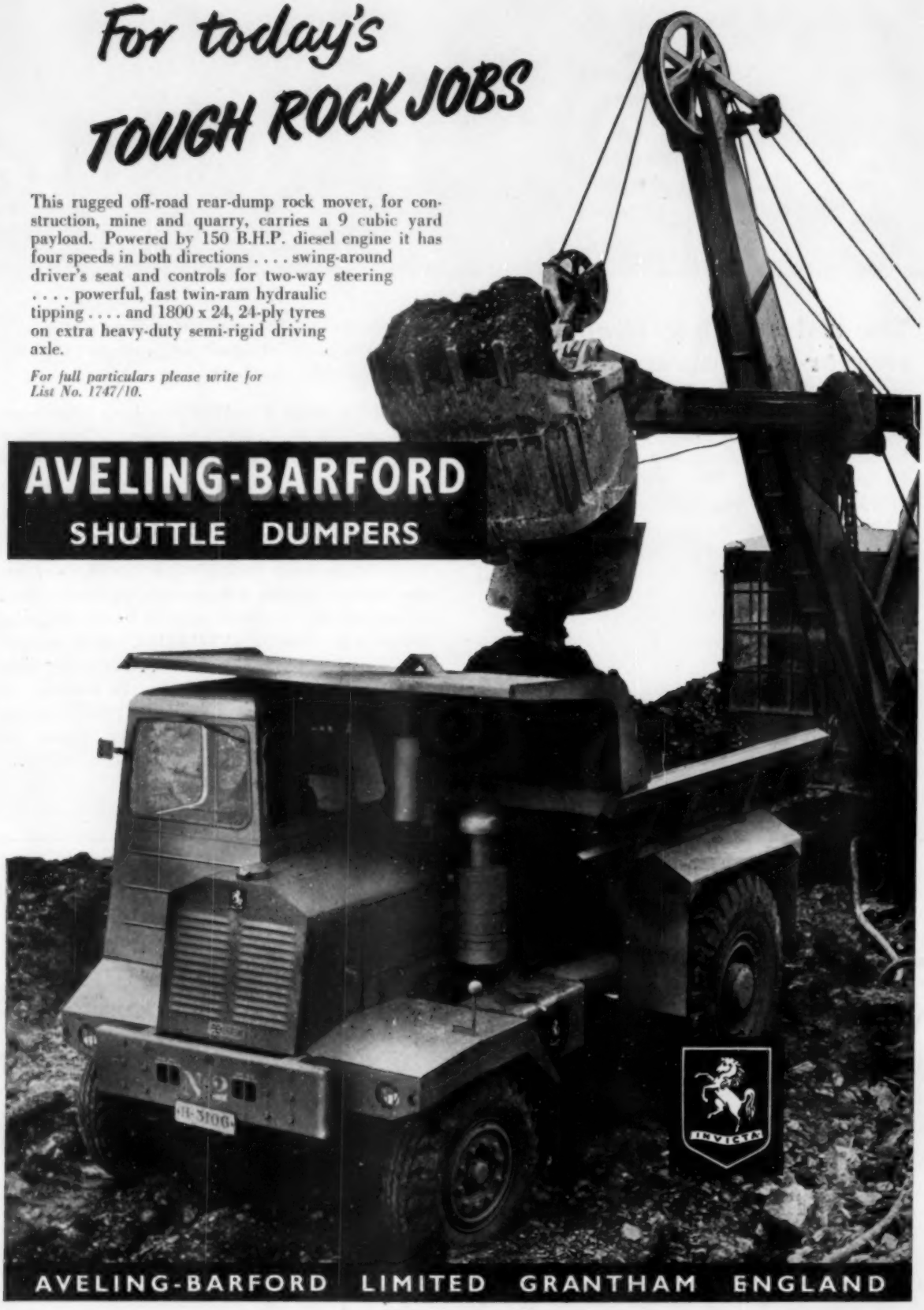
Send full data on 4-wheel-drive "PAYLOADER" model ( ) with Drott 4-in-1 bucket to:

Name _____
Title _____
Company _____
Street _____
City _____ State _____
90

For today's TOUGH ROCK JOBS

This rugged off-road rear-dump rock mover, for construction, mine and quarry, carries a 9 cubic yard payload. Powered by 150 B.H.P. diesel engine it has four speeds in both directions . . . . swing-around driver's seat and controls for two-way steering . . . . powerful, fast twin-ram hydraulic tipping . . . . and 1800 x 24, 24-ply tyres on extra heavy-duty semi-rigid driving axle.

For full particulars please write for List No. 1747/10.



How high load capacity is built into less space in Dodge-TIMKEN All-Steel pillow block

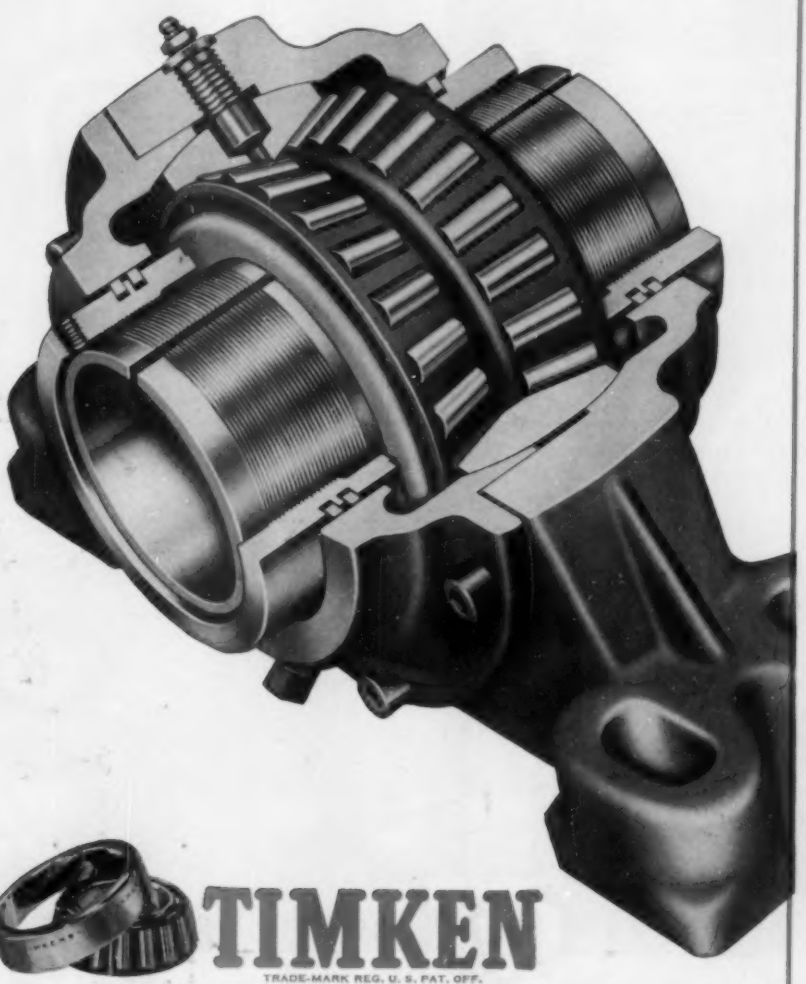
THIS rugged Dodge-Timken pillow block packs more capacity in less space than ever before. All-steel construction gives it extra strength and durability. The design is compact. No special thrust devices that take up extra space are needed—the two-row Timken® tapered roller bearing takes *both* radial and thrust loads in any combination. And full line contact between the rollers and races assures high load capacity.

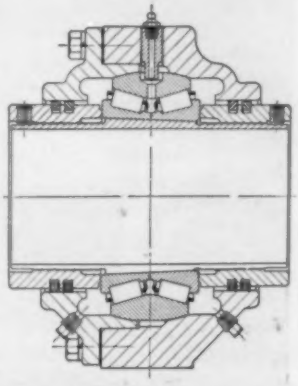
The cutaway view below shows the bearing. It is of special design, with tapered bore and self-aligning spherical outer surface—never requires adjustment. As in all Timken bearings, races and rollers are case-carburized and have tough, shock-resistant cores under hard, wear-resistant surfaces. Under normal conditions, the Timken bearing will last the life of the machinery with which the pillow block is used.

In addition to the all-steel pillow block shown here, Timken bearings are also used in the Type "E", Double-Interlock, Type "C", and Special-Duty pillow blocks—other versatile pillow blocks in the Dodge-Timken line with a wide variety of uses in industry.

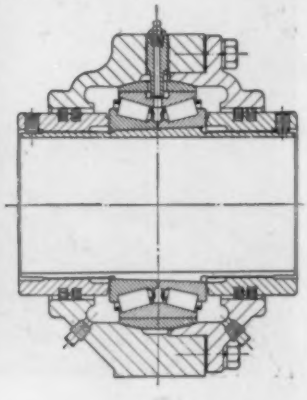
To be sure of the finest bearing steel, we make our own—America's only bearing manufacturer that does. No other bearing can give you all the advantages you get with Timken bearings. Include them in your design plans... specify them for the machines you buy or build. Look for the trademark "Timken"—it's on the bearing that makes any machine run better. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable: "TIMROSCO".

This symbol on a product means its bearings are the best.





How **DODGE MANUFACTURING CORPORATION,** Mishawaka, Ind., mounts Timken bearings in the Dodge-Timken All-Steel pillow block. Above: non-expansion block with fixed bearing. Below: expansion block with floating bearing.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

TIGER BRAND WIRE ROPE

Building the Long Sault Dam. When completed, this dam will contain approximately 653,000 cu. yds. of concrete. The three large gantry cranes used in pouring this concrete are rigged with Tiger Brand Wire Ropes.

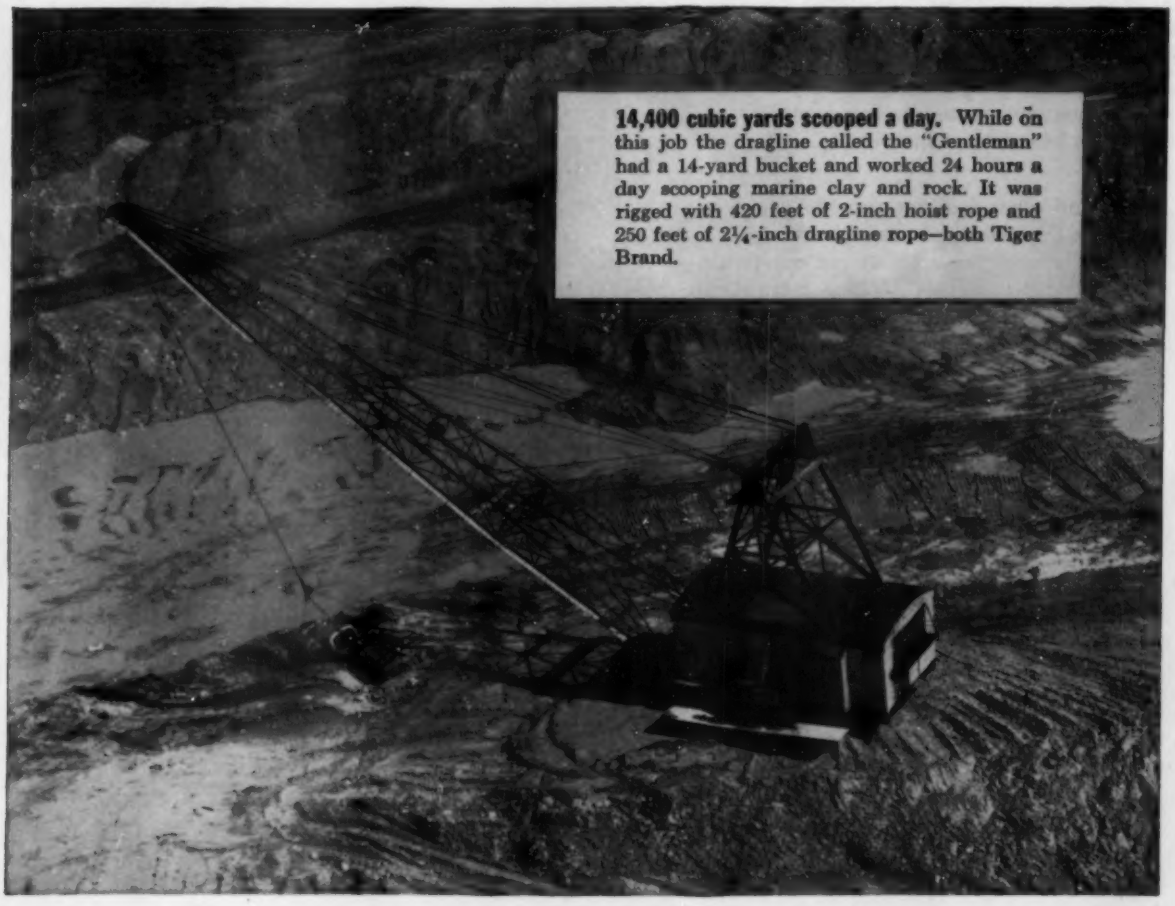
Sticky marine clay weighs almost twice as much as regular overburden, puts greater strain on wire rope and equipment.

Shovel rope takes a beating and Tiger Brand is made to withstand rough service and heavy abrasion.

at work on St. Lawrence Seaway and Power Projects

THE FABULOUS ST. LAWRENCE SEAWAY and St. Lawrence Power Projects are the largest construction undertakings of all time, costing over $900 million for the Seaway and power development. To keep the big machines working at top speed requires all kinds of wire rope—and most of it is USS American Tiger Brand.

Speed was such an important factor on this job that all equipment and supplies were selected with trouble-free performance in mind. American Steel & Wire set up a wire rope warehouse nearby for quick deliveries of any type of wire rope needed. Here are a few illustrations of the many jobs being performed by Tiger Brand Wire Rope.



14,400 cubic yards scooped a day. While on this job the dragline called the "Gentleman" had a 14-yard bucket and worked 24 hours a day scooping marine clay and rock. It was rigged with 420 feet of 2-inch hoist rope and 250 feet of 2¼-inch dragline rope—both Tiger Brand.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
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USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

40-R and 50-R Drills Prove Superior In Taconite and Other Hard Ore Bodies

Bucyrus-Erie rotaries are offering welcome relief to the problem of steadily mounting production costs. Applied in taconite and a variety of other extremely hard formations, they soon increase the rate of penetration so greatly that one Bucyrus-Erie rotary is able to replace several cable tool rigs.

Using compressed air to cool the bit and to clean the hole of cuttings, the 40-R and 50-R offer several advantages. By removing the need for water—a problem during cold weather—they eliminate auxiliary equipment, cut maintenance and labor costs. Heavy cuttings pile up adjacent to the drill, providing handy, excellent stemming material. Dry sampling of the hole can be accomplished easily and more accurately.

These and other features provide the fine performance that promises even greater economies in the future. Two rotaries are available—the 40-R for drilling 6¾- to 9-in. holes, the 50-R for drilling 9⅞- to 12¼-in. holes. Get all the facts on these drills today.

54857C

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

AT STEEP ROCK LAKE— Cost records for this 40-R, working 140 miles west of Port Arthur in Ontario's Rainy River district, show that the machine cut drilling costs per foot of hole by more than 50 per cent. The 40-R drilled 9-in. holes to the same average depth drilled previously by cable tool rigs.

AT A WESTERN IRON MINE

— Some of the toughest rock drilled by a 50-R was encountered here. On this assignment the 50-R shown here drilling 9⅞-in. holes, put down over three times as much footage per shift as each of the four cable tool drills it replaced.

ON THE MESABI RANGE

— Bucyrus-Erie 50-R rotaries are now drilling blast holes through taconite formations. A 50-R at one mine reduced costs as much as 34 per cent, and achieved a rate of peneration four times as great as the penetration rate of standard cable tool rigs.

IN LABRADOR— Drilling both 9-in. and 9⅞-in. holes, this Bucyrus-Erie 50-R was used to put down hole through material consisting of up to 63% iron and 2½% to 12% silica, with overburden made up of non-formation and dolomites. The overall performance of this 50-R was so favorable that the company later ordered five more.

INCREASE YARDAGE

DIG FASTER...DUMP CLEANER...LAST LONGER

Any way you look at it—from any angle—it's the taper that makes *ESCO* dragline buckets dig faster, dump cleaner, and last longer.

DIG FASTER. Bucket sides flare outward from the lip to increase loading speed. Materials are not compressed into the opening but allowed to expand and flow up and back along the tapered sides filling the bucket completely without voids in the rear. Bucket fills in shorter drag distance—less line pull required.

DUMP CLEANER. Taper from front to rear and outward flare from lip to arch allows load to drop quickly and easily from the bucket. Load dumps clear of high tubular arch.

LAST LONGER. Tapered design reduces loading and dumping friction to an absolute minimum. Bucket lasts longer. All welded construction and the maximum use of alloy steel castings makes a high strength-to-weight ratio resulting in "lower cost per yard operation".

SIDES tapered top to bottom

SIDES tapered front to back

BOTTOM tapered front to back

PATENTS PENDING

WITH *ESCO* TAPERED DRAGLINE BUCKETS

***ESCO* Tapered Dragline Buckets have been proved by thousands of hours of operation all over the world.**

Bring your bucket problems to *ESCO*, your bucket specialists. *ESCO* will "job-tailor" a bucket to your operation. Ask your nearest *ESCO* dealer for complete details today, or write direct.

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ELECTRIC STEEL FOUNDRY CO.

"My Footage went up better than 20%"

...says VINCENT DEL BROCCO, Del Brocco Contracting Ltd. of Toronto, Ontario, Canada

"I converted my Northwest 41 over to use an ESCO 1-yard Fastback® Hoe, cutting a 36-inch trench. My footage went up better than 20% and thanks to ESCO sharp points, I can dig shale and hardpan without shooting. For more feet of trench a day I prefer the ESCO hoe with adapters and sharp points."

ESCO has a Hoe Bucket of the right shape and size for your machine and for your kind of digging. Call your ESCO dealer today. He will show you how you can increase your footage . . . cut your production costs.

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ELECTRIC STEEL FOUNDRY CO.

From border to border, from coast to coast Users of ESCO Buckets on other jobs say —

"I have dug 150,000 feet of trench with this ESCO hoe bucket and so far am unable to detect any appreciable wear on the lip," says R. K. Nickerson, Contractor, Goldendale, Washington.

"We have three ESCO Hoe Buckets in use and have found them to be designed and built for the rugged use we must put them to in excavating this coral rock which must be dug without shooting. I like the long radial sweep of the bucket as it really gets through there without heeling in," says Superintendent Bill Crews for R. H. Wright & Son at Ft. Lauderdale, Florida.

Now MOVE 40 TON LOADS AT LOWEST COST WITH THIS Euclid *R-40*

TWIN-POWER REAR-DUMP

470 OR 500 TOTAL H.P.
TORQMATIC DRIVES
18.00 x 25 TIRES
80,000 LB. PAYLOAD
26 CU. YDS. STRUCK

This model R-40 is the newest addition to Euclid's complete line of Rear-Dump haulers. Built for jobs where big loads must be hauled, it incorporates all of the advance design features that have made "Eucs" the standard of performance for hauling heavy excavation in construction, mine, quarry and industrial service.

Two power trains—each with separate engine, 3-speed Torqmatic Drive and planetary drive axle—provide plenty of power to move capacity loads over tough haul roads and steep grades. The tandem axles are spring mounted to permit fast travel on good haul roads . . . the R-40 has a top speed of 26 mph with full payload.

Hydraulic booster steering makes this big Euclid easy to handle in close quarters and on tough hauls. Dumping angle of 67° and smooth interior of exhaust heated body assure quick, clean shedding of the load into hoppers, over the bank, or on the fill.

Your Euclid dealer will be glad to discuss the model R-40 and your off-highway hauling problems. He'll provide a production-cost estimate for present or planned operations, and can show you why ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Announcing another mark of leadership!

Bucyrus-Erie's *New* 1650-B

STRIPPING SHOVEL

with 40- to 65-cu. yd. dippers

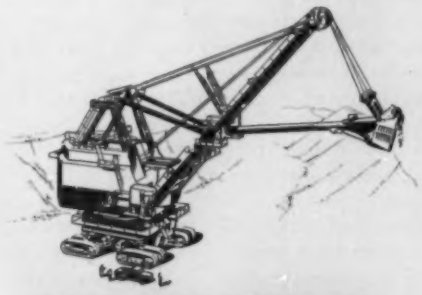
The new Bucyrus-Erie 1650-B stripping shovel offers a practical solution to a familiar stripping problem — economical coal recovery in the face of increasingly high overburden ratios. The 1650-B provides the necessary capacity and digging and spoiling range for efficient, big volume stripping. In addition, its unique flexibility offers a wide range of dipper capacities and boom and handle lengths, making it possible to select the most suitable digging combination for specific needs.

The 1650-B is available with 40- to 65-cu. yd. dippers, with dumping reach ranging from 178 to 135 feet. The machine illustrated here has a 55-cu. yd. dipper and a dumping radius of 147½ feet.

In every detail of its design, this electric-powered stripper is quality-built in the finest Bucyrus-Erie tradition. Throughout its history, the company has devoted its resources to the design and production of machines combining maximum long-time performance with minimum maintenance costs. As a result, Bucyrus-Erie stripping shovels and walking draglines have the range, capacity, speed and reliability to provide consistently high output at low operating cost. Their popularity attests to Bucyrus-Erie's leadership in stripping shovel design.

Let us help you with your stripping problems. We offer a complete line of stripping shovels and walking draglines from 2½- to 65-cu. yd. capacities.

123L57C



The first 1650-B stripping shovel built is equipped with a long range front end and 55-cu. yd. dipper. Named the "River Queen," this shovel was custom-built to handle dual seam stripping at the River Queen mine near Central City, Ky. The mine is owned jointly by W. G. Duncan Coal Company and Peabody Coal Co., and operated by Peabody.

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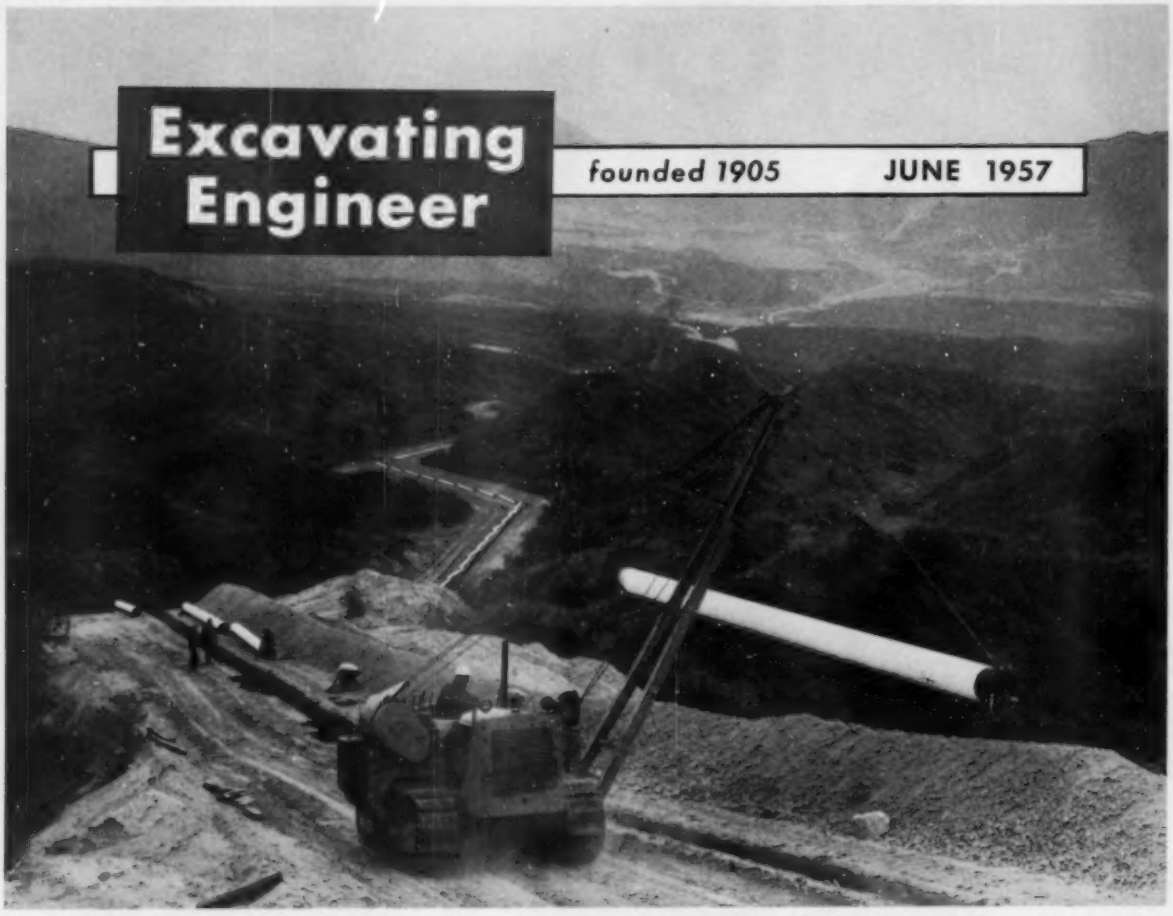


Pipe stringing in the rough areas where trucks can't reach on the Engineers Ltd. job is handled by a Cat side boom tractor.

Clear Rocky Path for California Pipeline

by Ray Day

PIPELINE stiffs, more than any other breed of construction men, know instinctively that the shortest distance between two points usually means trouble. This was proved recently by Engineers Ltd. Pipeline Co. and Southern California Gas Co. far back in mountainous terrain between Sunnymead and Loma Linda, Calif. Here was the problem:

California Electric Co., San Bernardino, has under construction near that city a new steam power plant. To turn its turbines, thousands of horsepower will be needed in the form of natural gas fuel for firing the big steam boilers. As principal utilities supplier for the area, Southern California Gas Co. had to lay a new 14 to 16-in. distribution line between Sunnymead, near March Air Force Base, and the new plant near Loma Linda.

Rugged mountain range between take-off and terminal points of natural gas line made ditching and pipelaying task in California difficult and interesting for Engineers Ltd. Pipeline Co.

Beeline Route

The shortest distance between those two points lay in a line through high mountainous ridges. After surveying alternate routes and studying the economics of the situation, engineering planners settled for the "beeline" route—and all its construction headaches.

Engineers Ltd. Pipeline Co., of Los Angeles, low bidder on the 11.5-mile pipeline, was very familiar with the type of headaches the job imposed. This one, however, had certain peculiar problems. Its short length practically eliminated any possibility of a long, well strung-out organization. It was necessary to plan a construction schedule around a relatively short project and simultaneously, to arrange for building right-of-way and ditch through steep, decomposed granite ridges that were hard to reach. Huge granite boulders, some as big as

an ordinary-size room, lay on the right-of-way. In one such place, where 3,500 feet of line lay along a steep mountainside, crews spent two weeks clearing the 50-ft. right-of-way! Drilling, shooting and trench excavation through the area were almost as tough.

No other economical alternates were available. The nearest by-pass route would have carried the line through terrain almost equally rough and far longer; the construction cost would have been prohibitive. The "beeline" route was well justified. It also was practical, thanks to the maneuverability and power of modern pipeline equipment. The equipment kept going even on 45° slopes.

The project includes two miles of 16-in. Kaiser steel pipe, with a wall thickness of ¼ inch, located on the Sunnymead end. The remaining 9½ miles is 12-in. Kaiser pipe of ¼-in. wall thickness. The new facility follows the general contour of mountainous terrain and has from 32 to 48 inches of backfill cover. Despite all the obstacles, Engineers Ltd. expected to have the job finished 90 days after starting it.

Precipitous Terrain

Although small portions of the line lay in the city areas of Sunnymead and Loma Linda, the major portion passed through rugged mountainous ridges. The huge granite boulders dotting the right-of-way had to be removed. Through the years, the hillside topsoil had become heavily matted by the roots of shrubs and low trees. This cover had to be removed. Cuts and fills were required in many places to provide a place for machines to work and stringing trucks to enter. Even then, it was frequently necessary to use winch Cats to move equipment.

To make things still more interesting, areas where solid granite rock protruded to ground surface required heavy drilling and shooting. The 3,500-ft. stretch in hard rock, which gave right-of-way crews such a tussle, took longer to prepare than the rest of the pipeline work which followed.

Among equipment assigned to the job were five Caterpillar D8's with angle-type dozer blades. After moving in, they stripped brush, gouged hillside cuts, made fills and shoved boulders out of the way. Since decomposed granite usually responds well to rooter-type loosening, two of the machines were equipped with Ateco dual-tooth hydraulic rippers. Use of the rippers eliminated some shooting. Kickoff time for the right-of-way crew came as soon as the contract was let.

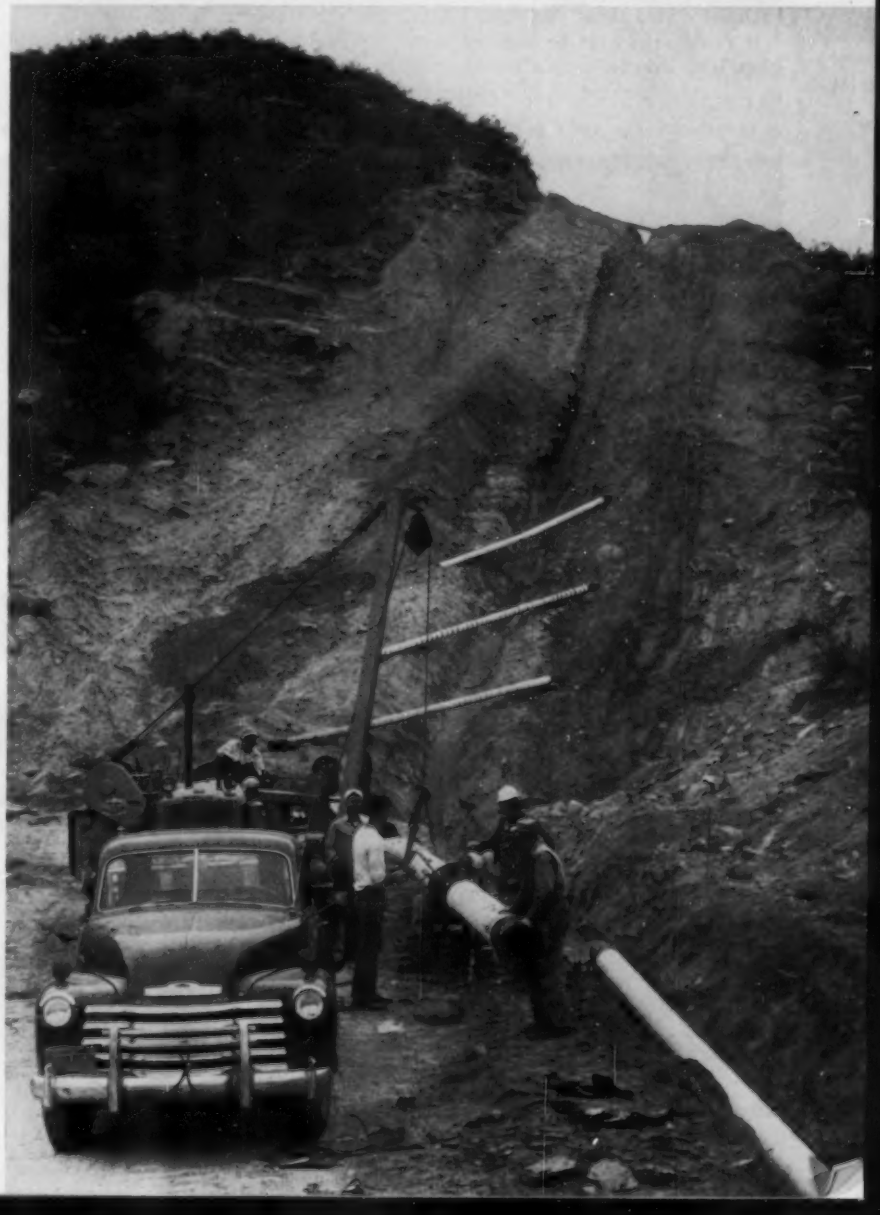
The predominate roughness of the job, coupled with a tendency for material to cave badly in other areas, dictated the use of dragshovel equipment for approximately 70% of the project. It was often ironic to work a dragshovel clear of a rocky area, only to find that an adjacent dirt section also would have to be dug by the same equipment because of its dry, caving characteristics. The two city areas of the job, and occasional other sections where dirt walls would stand up, offered places for conventional trenching machines.

The most difficult trench excavation was in the 3,500-ft. area where both solid and decomposed granite protruded to ground surface. It was a drilling and shooting job all the way. The same fleet of drilling and compressor equipment which had battled its way through the right-of-way portion of this cut again went to work.

Drilling was arranged in two spreads under the supervision of Gene Cook, job superintendent. He had two 315-cfm Ingersoll-Rand portable compressors, two Ingersoll-Rand 125's and eight I-R Jackhammers. With this equipment were 10 men consisting of drillers, driller helpers and powdermen. Each crew worked independently of the other, but with their joint effort coordinated by the superintendent.

The most workable drilling method consisted of a line of holes four feet apart down each line of the ditch. The spacing of the two rows was staggered

A laying crew and welders prepare to take the line up and over one of the steep hills. The line, 11.5 miles long, was built through steep, decomposed granite ridges.



so that diagonal explosive force in the shots would cover all the trench to give better fragmentation. Timken throw-away-type bits were used on the Jackhammers in 2, 1⅞ and 1⅛-in. sizes. The bits drilled up to 100 feet before they were discarded. Drill holes were carried a foot below ditch line floor grade. When a drilling gang had finished about 50 to 60 holes (this was usually half a shift's work), powdermen closed in to finish their distribution and loading of explosives. No springing was done; the holes were column loaded with Hercules No. 40 powder, placed from a point 12 inches below the ditch floor line to a point approximately a foot from ground surface. The powder consisted both of bag-type granular explosives and 40% stick gelatin. One cartridge of the latter type formed the exploder in each hole. Electric blasting caps wired in series were hooked up. Each crew fired about two shots a day.

It could reasonably be assumed that steep, mountainous terrain would offer no particular problem to a jackhammer crew. But that assumption was anything but true. Consider, for example, the plight of Bud Scott, operator of a small backfilling tractor.

Bud got orders one morning to tow one of the small two-wheel portable compressors to the top of a steep rise. Scott, an experienced operator, saw nothing wrong with the order. He backed up to the little compressor, hooked it on to his drawbar and took off up the mountainside right-of-way.

Bogs Down

He didn't get 30 feet. The tractor lugged down, its tracks began to spin and Scott cut off the power before the machine had a chance to dig in. Still trying to carry out his order, he found a larger tractor which was idle.

"This'll do the trick," he muttered as he hooked the drawbar pin in place. The unit, with street-plate-type tracks like the other tractor, lurched up the hill, possibly 100 feet, and got into the same predicament as the smaller machine.

"Do you know that before I got that compressor up to the top like the boss had told me, I had to go get a D7 with nearly new grousers on its tracks? Even then it took first gear to get to the top. That damn hill led halfway to heaven."

Engineers Ltd. used a Bucyrus-Erie 22-B ¾-yd. dragshovel for trench excavation, which it had purchased new for the work. In addition to its own rig, the company also rented a 22-B dragshovel. The two machines were put to work digging all sections of the trench where rock blasting had been done, and excavating other trench portions vulnerable to caving. Together, these two classifications represented approximately 70% of the job.

The 22-B's had their work cut out, according to Cook and H. D. Jennings, one of the operators. Although powder crews had done their work as well or better than could be reasonably expected, there were numerous places where the disintegrated granite still was fairly solid. The 22-B had to dig and break the material loose at these points.

One particularly tough ditch excava-

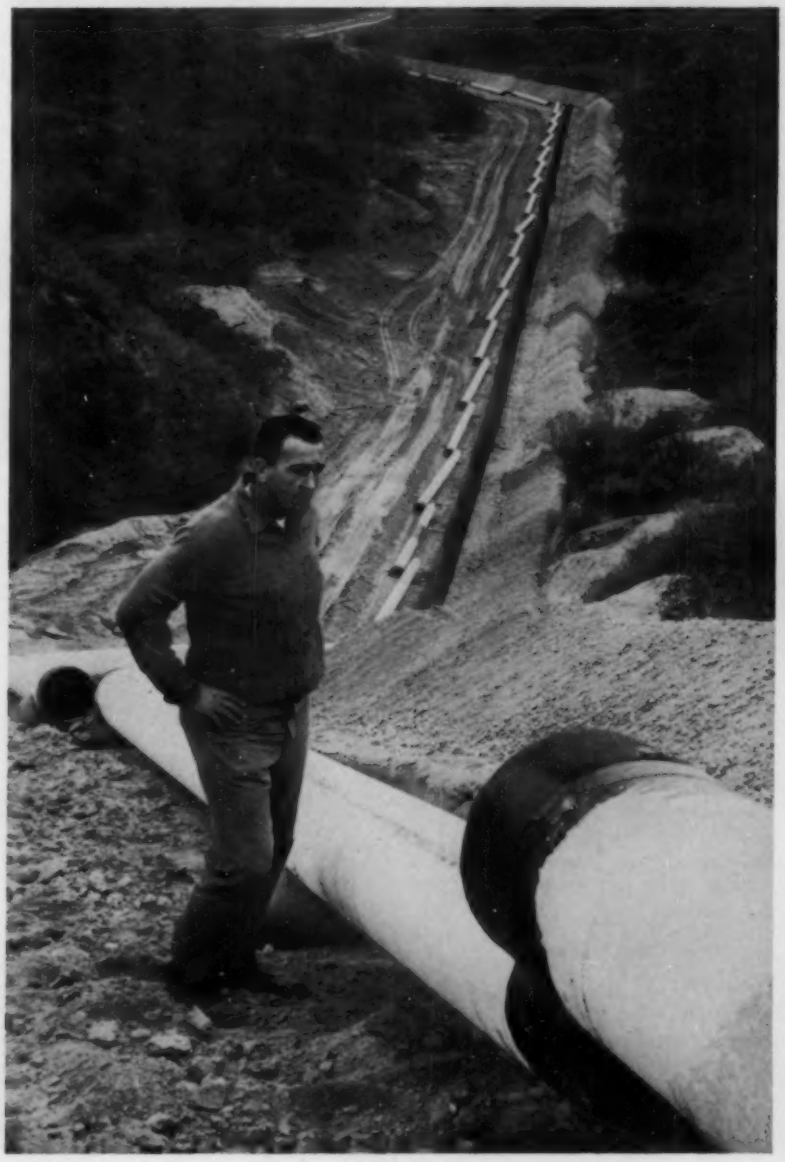
A dragshovel digs out a section where the ditch had caved. In the background is a yard which serves as a staging area.

tion assignment for the new 22-B was on a 250-ft. mountainside slope in broken granite. The granite, which lay on a dizzy 45° grade, had to be excavated to a depth of 42 inches. It was a slope which had caused the right-of-way bulldozers considerable difficulty, and which had called for pipe stringing by tractor. The 22-B moved in at the bottom of the slope and began to excavate the trench by backing upgrade.

When the start of the 45° section was reached, a Cat D7 tractor with a Hyster rear-end winch and ⅞-in. cable was hooked to the machine. When eight or 10 feet of the ditch was cleaned out, the 22-B and its tractor-helper worked uphill a few more feet for the next section. The 250-ft. slope trench, in some of the hardest rock on the project, was completed in 3½ hours. The 22-B has a Cat D318 diesel engine.

The decomposed granite particularly was highly abrasive; tooth points wore out after approximately eight hours of use. In softer formations, particularly in those areas which were easier to dig but vulnerable to caving, abrasion re-

(Above) Backfill is handled by an Allis-Chalmers HD-5 tractor with a Tractomotive front-end shovel. (Below) Stringing trucks needed tractor help on grades like this.



With the ditch dug and the pipeline joints strung out, machines move in to assemble the line. Location of the pipeline job is only 60 airline miles from Los Angeles.

duced so that the tooth points lasted up to 80 hours. But in both hard and easy digging, operator Jennings increased the tooth-point life by switching points around occasionally whenever time permitted. The corner points, which soon wore down on one side, were switched to a position in the middle of the bucket. Points which wore more evenly in that section were switched over to the corners. The operation took only a few minutes, because all that was necessary was the removal of a holder pin, the switchover of the point and the pin replacement. It paid off by adding 30% to tooth life.

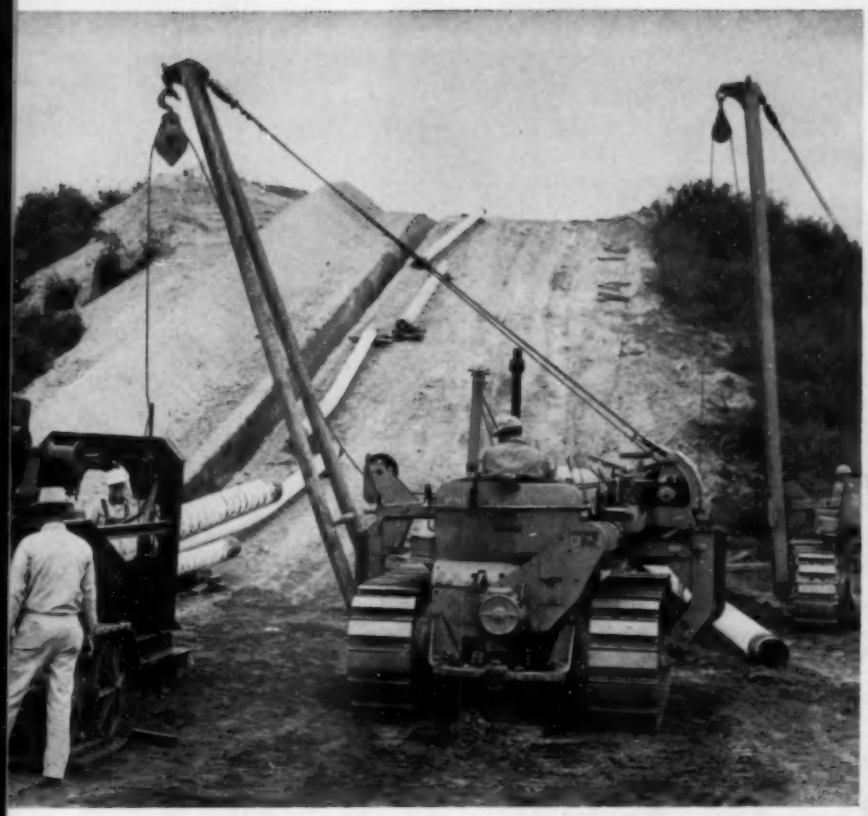
Use Trenchers

In the towns of Sunnymead and Loma Linda and in some stable dirt areas between, it was possible to excavate the trench with conventional ditching machines. A small Cleveland Model 140 did the work in the two cities. A larger Cleveland Model 320 was used in mountainous sections where much steeper grades were encountered. When these machines ran into caving formations, they moved ahead to the next section of stable material, leaving the caving area for the dragshovels. In digging this type of material, the 22-B's opened up the trench so that the material would stand safely on its natural angle of repose. It was often necessary to excavate to a ¾ to 1 slope to get that result.

Airway Trucking Co., Los Angeles, hauled and strung the 40-ft. pipeline joints throughout the job. The pipe was originally fabricated in Kaiser Steel's rolling mills. and was transported to Southern California Gas Company's coating yard in Los Angeles, where the necessary dope, cellophane and wrapping paper were applied. Airway Trucking hauled the completed sections from Southern California Gas Company's yard to the project, where unloading was carefully done by tractor-mounted side booms. Specifications prohibited any part of the pipeline from touching the ground until assembly. Timber cribbing and sandbags had to be used under each section, regardless of the steepness of slope. Where it was possible, the pipe was unloaded next to the ditch. Where grades were too steep, however, stringing was done by tractors and side booms working from Airway's big Peterbilt and White Freightliner trucks.

Assembly of the pipeline involved bending certain sections of pipeline to predetermined radii with a cable-controlled CRC bending machine, cleaning the beveled joints with a grinder, joining the sections together, making the final welds and placing protective coating over the joint locations. This entire operation was done as a unit using three D6's and a D7 with Caterpillar pipelayer side booms for handling the pipe joints. The ¼-in. steel-walled pipe ends were cleaned by electric-powered grinders. Sections were assembled in special clamps which matched the ends tightly together.

If field cuts had to be made, a Crose No. 200-A beveling machine held a cutting torch as it moved in a precise ring around the pipe. Up to seven Lincoln 200-amp gas-powered welding ma-



A CRC cable-controlled bending machine puts a turn in a 40-ft. length of pipe.

chines were used to join the pipeline together. Each joint weld consisted of a stringer bead, a hot pass bead, a filler and a cap. There was no variation in welding rod in these four beads. Lincoln Fleetweld No. 5 rod was used for all four passes.

After the welding had been finished, the 18-in. uncoated section at the joints was hand-cleaned by power buffers and a coat of bitumastic primer was applied. Following this was an application of special bitumastic dope furnished by Southern California Gas Co. through one of its suppliers, two wraps of cellophane, another application of bitumastic dope and a final coat of protective paper. The line also was designed for electrolysis protection. There were ETS stations every 2,000 feet.

The final operation was replacing backfill and dressing the right-of-way. Backfill material was replaced carefully by an Allis-Chalmers HD-5 tractor and Tractomotive front-end loader. This machine could pick fine material, relatively free of large rock, for the bottom backfill next to the pipe. One laborer also was used in the bottom of the trench, even when the material was good. His job was to intercept and shunt aside

Continued on page 70

(Right) Superintendent Gene Cook watches hookup of sections. (Below) Welders line up pipe ends with the help of a clamp to join two main sections together.

A Fruin-Colnon dragline brings up another load of mud during excavation for the smelter and power plant of Alcoa's new Warrick Works project at Yankeetown, Ind.

Contractors Fight Mud on Alcoa Plant Job

MUD, the vagabond king, made an unexpected and unwelcome appearance last year during the grading work for the Aluminum Company of America's (Alcoa) new Warrick Works smelter and power plant at Yankeetown, Ind.

Fruin-Colnon Contracting Co., St. Louis, Mo., was awarded the clearing, stripping and grading contract for the 350-acre site bordering the Ohio River, 16 miles east of Evansville, Ind. Estimates included 3½ million yards of dirt excavation and ½ million yards of rock.

Using a fleet of scrapers and a couple of shovels, Fruin-Colnon started to excavate last July. Suddenly, with the discovery that abou: 1 million yards of dirt had gone into mud, the situation changed. A hurry-up call was made for draglines.

The draglines came. With the advent of winter, Fruin-Colnon had three draglines excavating the mud and dirt. The spread worked 19 hours a day, six days a week, to complete the contract by early spring.

Largest of the draglines was a Bucyrus-Erie 71-B, a torque-converter machine which was swinging a 5-yd. medium-weight Bucyrus-Erie perforated bucket from a 70-ft. boom. The machine had long, wide (42-in.) crawlers.

Three Passes Load Euc

When *Excavating Engineer* visited the job in December, the 71-B was cutting down a 20-ft. high hill to grade. The excavator needed only three passes to load each of the three 15-yd. Euclid bottom dumps which were assigned to work under it. The 71-B was swinging about 90°.

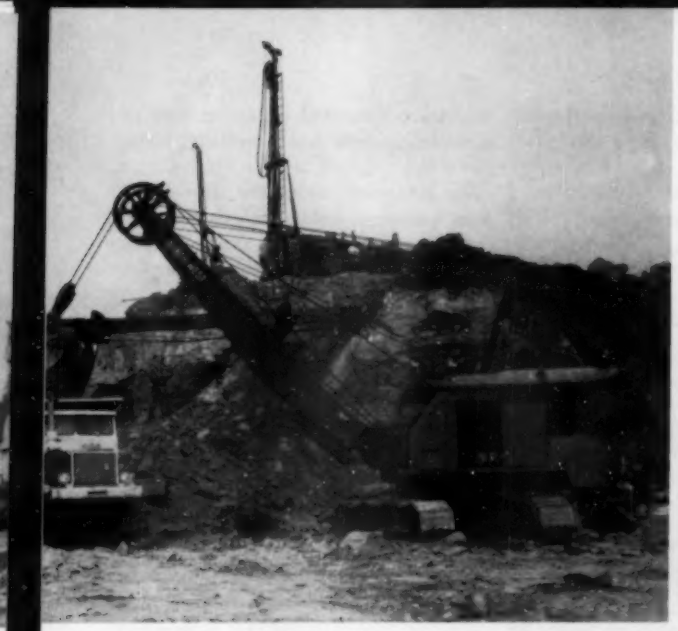
Two other Bucyrus-Erie draglines—a 54-B with a 3-yd. bucket and a 38-B with a 2-yd. bucket—also were active in December. A Manitowoc 2000-B dragline with a 1¼-yd. bucket had done some excavating earlier.

The rock excavation was assigned to two Northwest 80-D shovels with 2½-yd. dippers. The rock, a limestone cap over shale, was blasted loose every day with either Hercomite, Atlas or Hercules powder. The 4-in. drill holes, spaced on a 10 x 18 pattern, were put down by Joy Challenger drills mounted on two Caterpillar D8 tractors carrying Joy 600 compressors.

Twelve Euclid end dumps worked under the shovels. Included were eight of 15-tons capacity and two each of 22 and 10 tons. The draglines loaded into

A twin-power tractor pushes a scraper during a loading cycle in soft earth.

When a million yards of dirt went into mud, Fruin-Colnon Contracting Co. had to send quickly for draglines to complete grading 350-acre site for aluminum smelter, power plant.



Also active on the Fruin-Colnon job were these two rigs—a 2½-yd. shovel (left) and a dragline equipped with a 3-yd. bucket.

11 Euclid 15-yd. bottom dumps. Hauls between the plant and the spoil or borrow areas ranged from 2,000 to 4,000 feet.

Fruin-Colnon's fleet of 14 Euclid scrapers included 12 ranging in capacity from 18 to 21 yards and two of 23 yards. Tractor equipment included four Euclid TC-12 pushers, eight Cat D8 dozers, one Allis-Chalmers HD-21 dozer and an HD-20 dozer. Two of the D8's pulled 50-ton compactors.

At peak activity, Fruin-Colnon employed 140 men on the day shift and 95 at night. Five portable and 10 permanent poles were utilized to mount lights for night work.

Fruin-Colnon officials included Jake Watkins, project manager; J. T. Elrod, general superintendent; R. W. Christmann, equipment manager; Doc Sullivan, equipment superintendent; Swede Edner, night superintendent; William Corey, day general foreman; Vance Griepenstroh, night general foreman; Jack Grinstead, office manager; E. Moser, timekeeper; M. Johnson, assistant timekeeper; and William Gentry, equipment timekeeper.

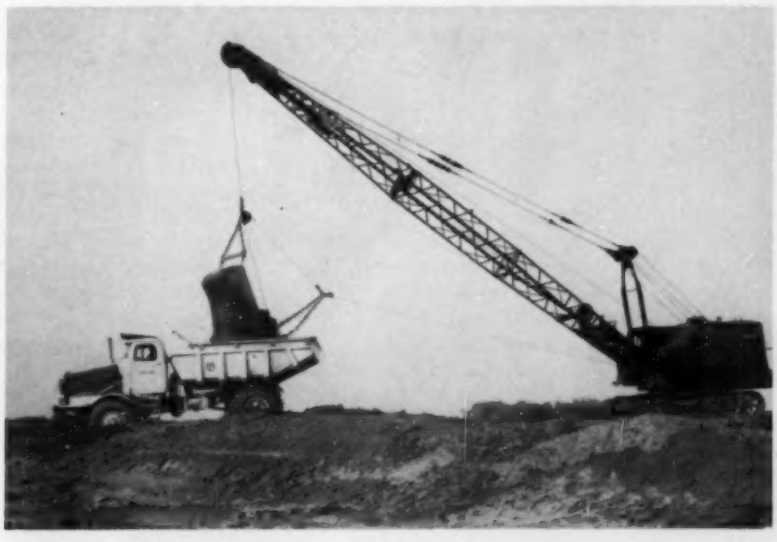
Opens in 1958

With a capacity of 150,000 tons, the new Warrick smelting plant will boost Alcoa's installed annual primary capacity, existing and planned, to 962,500 tons. The plant is scheduled to begin partial production in late spring or early summer of 1958.

The smelter at the Warrick Works will be Alcoa's eighth, but only the second to depend on hard fuel for its power supply. A 375,000-KW steam power plant will be fired by coal supplied to Alcoa under a long-term agreement with the Peabody Coal Co. of the Peabody-Sinclair-Southern Group. The coal land in Warrick County, which will be owned by Alcoa and mined by Peabody, is estimated to contain a sufficient amount of fuel to meet the power plant requirements for 30 to 40 years. The Warrick power plant will be operated for Alcoa by Southern Indiana Gas & Electric.

The $80 million Warrick Works project also includes the construction of

A load of material is dropped into a dump by a dragline with a 2-yd. bucket. Totals of Fruin-Colnon job included 1 million yards of earth, ½ million yards of rock.



docking facilities to handle possible river shipments of alumina and other raw materials and equipment.

Eventually, about 1,200 persons may be employed at the Warrick Works with an estimated annual payroll of over $5 million.

Alcoa has to date purchased more than 4,000 acres of the 6,000 acres of land it has on option in Warrick County. The company wants to be prepared to expand should it decide to add production capacity or, if economically feasible, to build an aluminum fabricating plant or foundry close to the smelter. Approximately 250 acres will be fenced in to form the enclosures for the plant site proper.

With the grading work nearing completion in December, other phases of the Warrick project had begun or were to start soon. Men were working night and day.

An Evansville contractor, Roy Ryan Sons Co., Inc., holds the contract for installing storm sewers, underground waterlines and sanitary sewers for the smelter. This contract embraces:

1. Laying approximately 28,000 feet of reinforced concrete pipe, ranging in size from 12 to 90 inches in diameter, for storm sewer.
2. Laying 9,000 feet of vitrified clay pipe, ranging from 6 to 12 inches in diameter, for the plant sewage system.
3. Laying approximately three miles of asbestos-cement water line, 1 to 16 inches in diameter. Some of this work has been sub-contracted to the Union Construction Co., Sturgis, Ky.

Roy Ryan Sons is installing storm and sanitary sewers and water lines. (Top) a crawler crane handles storm pipe. (Bottom) A manhole is placed by a Transit Crane.

Lay 525 Feet Daily

With 65 of its own personnel on the job, plus 13 Union Construction men, the Ryan spread was pushing ahead of schedule in December. The contract was scheduled to be completed during the spring. Working one eight-hour shift, Ryan was laying approximately 525 feet of pipe per day under the direction of Arnold Perry, assistant vice president and job superintendent, and George Ryan, company vice president and assistant job superintendent. Roy Ryan is president.

Ryan's biggest problem was unstable ground conditions. Original plans called for placing the pipe atop a 2-ft. layer of bank-run gravel. When this proved unsatisfactory, a 1-ft. layer of No. 2 stone was substituted. This solved the problem, although it was necessary to haul the stone eight miles.

Ryan was using two draglines and two dragshovels for trenching. These

included a Bucyrus-Erie 51-B dragline with a 2½-yd. bucket; a Lorain 820-K dragline with a 2-yd. bucket; and two Bucyrus-Erie dragshovels — a 1¾-yd. 38-B with 54-in. side cutters and a ¾-yd. 22-B. A 22-B Transit Crane was used for unloading pipe and erecting manholes.

Union Construction used a Cleveland Trencher and a Ford tractor with a Sherman backhoe for trenching; a Cat MD7 sideboom and a ½-yd. Insley crane for handling pipe. Other equipment included an Allis-Chalmers HD-15 tractor; an HD-5 front-end loader; a Cat D6 dozer; an International TD-9 with a Drott Skid-Shovel; and a TD-18 dozer.

Some 6,000 yards of borrow for the Ryan job were hauled about a quarter-mile in a LeTourneau-Westinghouse Model C Tournapull. Rented LeTourneau-Westinghouse and International tandem trucks hauled away unsuitable gumbo. Other trucks included the following Fords: an F-8 semi; a T-700 tandem dump; an F-7 dump; and F-5 flat trucks.

Barro rammers, Ingersoll-Rand Triplex tampers and a sheepsfoot roller were used for compaction. Pumping was handled by 3-in. Gorman-Rupp, Homelite and Marlow pumps, using 2-in. fire hose.

Aluminum Buildings

Under an earlier contract, Ryan erected Alcoa's temporary construction division offices and warehouses at the plant site. All of them are one-story and are constructed of Alcoa corrugated embossed aluminum farm roofing and siding.

The construction division office building is 180 feet long and 32 feet wide. The two warehouses are 130 x 56 feet.

Working on mats, this machine trenches with a dragline bucket, then uses a hook to place sewer pipe. Ryan's job included the laying of 28,000 feet of storm sewer.

A 39 x 29-ft. office building is between the warehouses. Both of the warehouses are of the pole frame design.

Aluminum roofing and siding will be used extensively in the construction of the permanent plant buildings. Contracts for these buildings have not been let.

Gust K. Newberg Construction Co., Chicago, Ill., began work last fall on a contract covering construction of all principal structure and equipment foundations, the yard drainage system, the circulating water conduits and all related foundation work pertinent to the power plant. Foundations will be built for three boilers and three turbines. Foundation pedestals will be built for three 125,000-KW generators. Also included are foundations for the transformer yard and the switchyard and for storage, service, warehouse and water treatment buildings.

The Newberg contract is scheduled to be completed in September. At the peak period, approximately 180 men will be employed. Bill Hamilton is job superintendent and Ed Tollas is assistant superintendent.

Included in the Newberg spread are two Bucyrus-Erie cranes—a 54-B and a 51-B—which handle circulating water pipe in 16-ft. sections that are 84 inches in diameter and weigh 21 tons each.

This Ryan dragshovel has a 1¾-yd. dipper with 54-in. side-cutters for trenching.

Another crane, a 38-B, handles reinforcing rod and pours concrete with a 1½-yd. bucket. A fourth machine, a 22-B dragshovel, digs trenches for 8,000 feet of concrete sewer pipe 15, 18 and 24 inches in diameter.

Among other equipment are two Cat D9 dozers and a D5 front-end loader, an Allis-Chalmers HD-19 dozer and five Ford trucks—three dumps, one pickup and a flat bed.

Pile-Driving Contractors

Hercules Concrete Pile Co., West New York, N. J., and the Raymond Concrete Pile Co., New York, N. Y., hold separate pile-driving contracts.

Hercules was driving approximately 4,400 steel-jacketed load-bearing piles totaling 220,000 lineal feet for the power plant foundation. Cast-in-place concrete fills each of the piles, which are about 12 inches in diameter. The piles were driven as deep as 85 feet; the average is 50 feet.

Hercules' contract was awarded by Ebasco Services, Inc., New York City, designer of the power plant. Ebasco is supervising construction of the power plant and is acting as Alcoa's agent for the letting of all contracts pertaining to it.

More than 4,100 piles totaling over 300,000 lineal feet are being driven by Raymond for the smelting plant facili-

Continued on page 66

Demonstrating its long reach for visitors, the *River Queen* spoils overburden several hundred feet from spot where it was dug.

Unveil Giant Coal Stripper

A 2,400-ton stripping shovel—one of the largest mobile land machines ever built in the United States—was demonstrated May 9 to some 100 representatives of the press, radio-TV and other special guests. The big stripper was exhibited at an open house held at a large, new open pit coal mine in western Kentucky.

The shovel has a 55-yd. dipper and is able to take an 80-ton bite of earth and rock. Called the *River Queen*, it is taller than a 13 story building and weighs more than a navy destroyer.

The *River Queen* is the largest shovel ever built by Bucyrus-Erie Co., South Milwaukee, Wis. It is designated a model 1650-B long range stripping shovel and is the first in a new Bucyrus-Erie series.

The machine is being used to uncover two seams of bituminous coal in the River Queen Mine near Central City. The mine is owned jointly by the W. G. Duncan Coal Co. and Peabody Coal Co. It is operated by Peabody. When in full operation, its output will be 2 million tons of coal annually, mine officials say. Shipments will be both by rail and in barges loaded over the mine's dock on the nearby Green River.

The big shovel, standing 140 feet high, has a 145-ft. boom and an 86-ft. dipper handle. This enables it to dump rock and earth overburden nearly 300

Formal showing of new 55-yd. stripping shovel is held at River Queen Mine, Central City, Ky., for press and special guests. Machine, weighing 2,400 tons, uncovers two seams of coal.

Cavernous 55-yd. alloy plate dipper is a popular attraction during idle period.

feet away from the digging point and to stack it more than 100 feet high. In each pass of its mammoth dipper, the *River Queen* excavates enough material to fill a room 14x12x9 feet.

Officials present for the occasion included Ted L. Kelce, executive vice president of Peabody Coal Co.; L. H. Brown, vice president of W. G. Duncan Coal Co.; W. L. Litle, chairman of the board and president of Bucyrus-Erie Co.; and O. L. Dunn, general manager of the direct current motor and generator department, General Electric Co. G-E built the electric motors that power the *River Queen*.

Program Schedule

Guests at the open house were first briefed at the mine headquarters building on the operation of the shovel and were furnished press kits containing news material, photographs and other pertinent data on the mine and shovel.

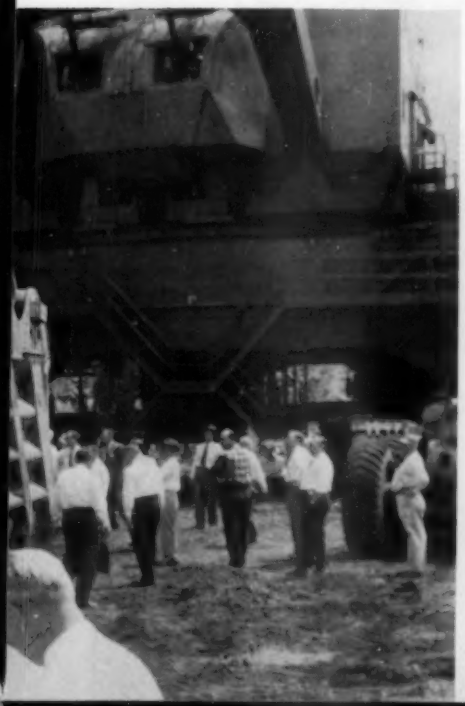
The party then moved by auto to the pit where the shovel was in operation. The new unit was put through its paces for the visitors and then made idle to permit them to climb aboard the machine. Visitors inspected equipment inside the air-conditioned cab and walked into the dipper to try its size. A few hardy souls even scaled the boom climbing up to the platform around the boom sheaves 13 stories above ground.

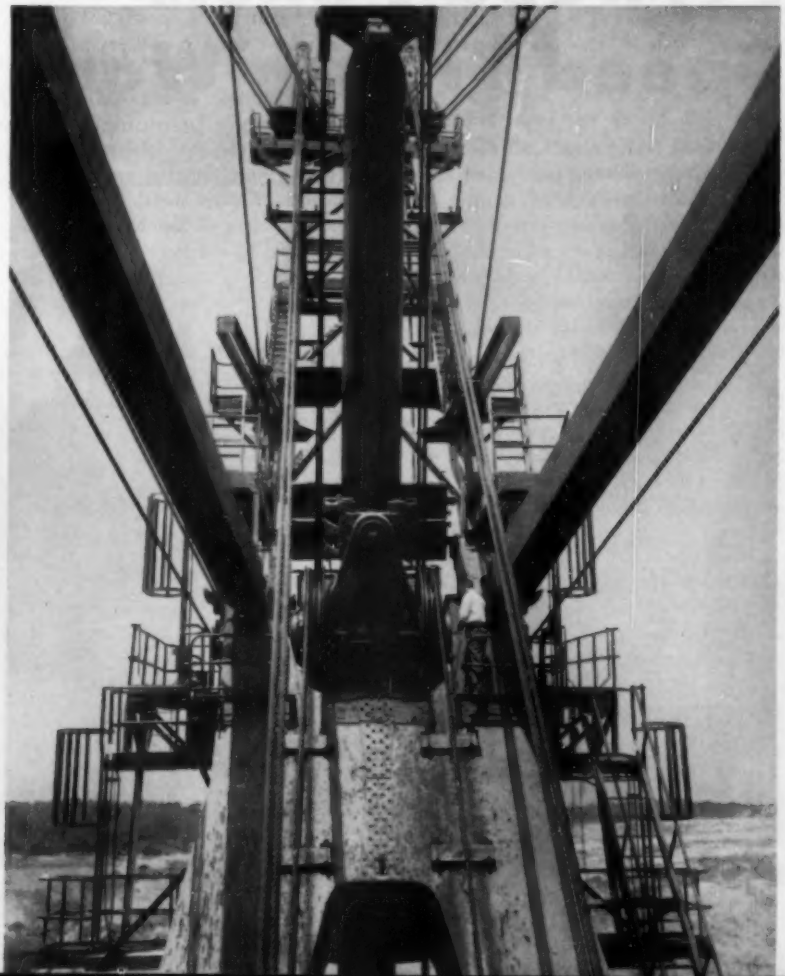
According to a spokesman for the River Queen mine, the firm expects to be washing coal by August. Pit development and building construction is being rushed to meet this goal.

Erecting of the big shovel took sever-

Continued on page 62

(Above) Visitors at open house file into the air-conditioned cab of the 1650-B to view machinery and conveniences. (Below) Ambitious climber inspects saddle block on boom.





Zara Contracting Co. shored up the dirt walls of this sewer excavation on Long Island with fir panels spaced two feet apart and facing exactly opposite along the trench.

Plywood Panels Speed Trench Work

A Long Island contractor has effectively replaced costly and hazardous methods of shoring up dirt walls of moderate-depth ditches by using fir plywood panels which have not only proven safer but have also reduced digging crews from ten to eight men and reduced material costs because of the panels' re-usable advantages.

Zara Contracting Co., Hicksville, N. Y., replaced the older method of using 2x10-in. shoring stock every four feet by switching to 4x8-ft. panels of ⅝-in. exterior-type fir plywood which are placed upright on both sides of sewer ditches.

The system works like this. Immediately following the trench digging machine, crews place the plywood panels every two feet along each freshly cut wall so panels face exactly opposite on either side of the trench. Vertical 3x8 uprights in 8-ft. lengths are nailed to the center of each panel. Horizontal walers, consisting of about 5-ft. lengths of 3x8's, are forced between these vertical uprights so they run across the trench about two feet down from the top of the plywood panels. Finally, 3-ft. long 2x8 horizontal walers are forced into the same position about three feet up from the bottom of the panels. All walers are nailed to the vertical uprights. As each section of sewer pipe is installed, the lower waler is removed to make room for the pipe.

Joe Gibbons, estimator for the Zara firm, says, "By using the plywood sheeting our gangs can work faster and cover a larger area than when the 2x10's were used. Actually, the plywood sheeting allows us to cut down two men on a crew of ten men and a foreman on a trench machine crew."

The firm has saved money on material costs as well as labor. According to Gibbons, the plywood sheeting eliminates many expensive braces and can be used over and over. Costly cave-in accidents have been practically eliminated.

"Plywood sheeting is safer," Gibbons explains. "It's particularly valuable in sandy areas. Even though there is a space between the sheets, the sheeting tends to hold that area up by holding back the walls firmly on either side."

Tony Orsino, superintendent of Zara construction crews, estimates that in a recent job done in Baldwin, N. Y., up to 200 feet of ditch was gained in one eight-hour shift by using the fir plywood sheeting. This was because soil in the particular area was mostly sand and pea gravel.

In one week his crews set a "sort of record" by digging 612 feet of sewer with one trenching machine, one gang and the plywood sheeting—all in the space of eight hours. "But this is nothing unusual," states Orsino. "We've also dug 400, 450 and 500 feet of ditch in one day with this method."

Workman nails 5-ft. long horizontal waler to vertical 3x8 upright which, in turn, is nailed to the plywood panel. Another horizontal waler spans the trench near bottom.

Contractor adopts safe shoring system using 4x8-ft. panels of ⅝-in. plywood.

Variety Keeps Salem Firm Busy

by Floyd Suter Bixby

Under the leadership of Bob Brady (left), assistant manager, and Tom Hill, excavation superintendent, Salem Sand & Gravel contracting business has grown fast.

Sand and gravel producer in Oregon develops construction division that ties in well with available equipment and personnel. A half dozen utilities jobs are often active simultaneously.

ON a cold morning a few months ago, trucks bustled busily around the asphalt plant at Salem Sand & Gravel Co. headquarters. The plant was running at capacity. In a headquarters shop, men worked to get construction equipment back out on the job. In the main part of Oregon's capital city, a 20-ton mobile crane began to lift 8-ton reinforced concrete panels for a new store being erected there.

Twenty miles north of Salem, a ¾-yd. dragshovel scooped a neat ditch with square sides for a steam tunnel to serve an addition to the MacClaren Boys School. A ½-yd. machine, loaded on a low-bed trailer, left the yard bound for another job. Altogether, it was a scene of midsummer activity at a time of year when Pacific Coast weather puts a damper on construction.

What was happening there was not an exaggerated condition. The construction division of this outfit has geared its work around a type of construction which lends itself well to all-season work. Specializing in utilities excavation, SS&G installs sewer and water lines, builds steam tunnels and lays miles of telephone and electric conduit. Last year the company did about 70,000 feet of gas distribution pipeline work for Portland Gas & Coke Co. It is not at all uncommon for the firm

At an Oregon school 20 miles north of Salem, an SS&G ¾-yd. dragshovel digs a steam line at the rate of 75 yards an hour.

Maneuvering in a tight alley, a 22-B Transit Crane works its way into a building construction site to raise tiltup concrete slabs. Crane is also used for heavy rigging.

to have six or seven such utilities jobs under way simultaneously.

As any good excavation man might suspect, these jobs run a wide range of difficult conditions. The firm has a full-time bidding section under Bruce Smith, chief estimator, which figures and bids the jobs in order to keep the construction mill supplied with work. Several years ago, Smith bid one job which turned out to be so difficult that Bob Brady and Tom Hill—executives of SS&G—gave Smith the job to run. It had everything in the book, including a chapter or two which up to that time hadn't been written.

The project was a $100,000 extension to sewage outfall facilities for the seashore city of Coos Bay, Ore. In the old days, a sewage outfall had been constructed out into the blue Pacific. It had since proved inadequate. There were numerous cross lines and laterals, which would be intersected by the new outfall, in SS&G's contract. In bidding the job, Smith knew that he was in for trouble because most of the new parallel outfall line lay six feet or more beneath the surface of the ocean. Should a shovel operator open up a pipeline trench, and dig into one of the older lines at high tide, one thing was certain: the Pacific Ocean would come boiling into the construction area, pushed by a 6-ft. hydraulic head.

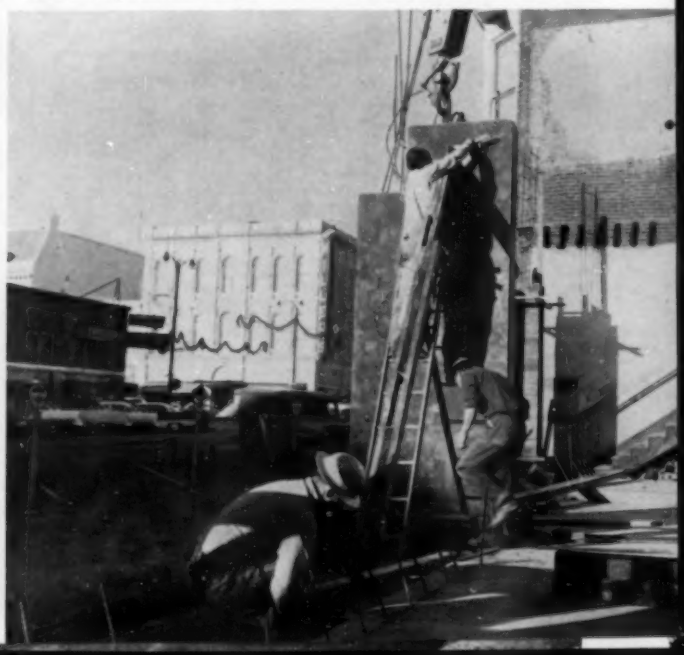
To complicate matters further, the soil formation included quicksand. It was anybody's guess what might happen when machines moved in to open up this project.

Break Open Lateral

They were not long in finding out. Because the trench was small (it needed to enclose only 8 to 15-in. diameter pipe), the firm had assigned two Bucyrus-Erie 10-B's and several 15-B's to dig the trench. The former were ⅜-yd. dragshovels; the latter were ½-yd. dragshovels. The first bad condition to show up was an absence of accurate information on the plans regarding the exact location of many of the old cross laterals. It wasn't long before an operator dug into the old line at high tide, cracking open a section of sewer-line wall. The sea boiled in, and soon the construction area was a mess.

It was necessary to revise all construction schemes planned up to that time. Dragshovels, instead of stringing

(Left) A 4-ton slab of precast concrete for a store front is raised into position. (Right) Workmen install tie-down braces.



A truckload of asphalt mix leaves the main yard bound for one of Salem's road jobs. In background is firm's Madsen hot plant.

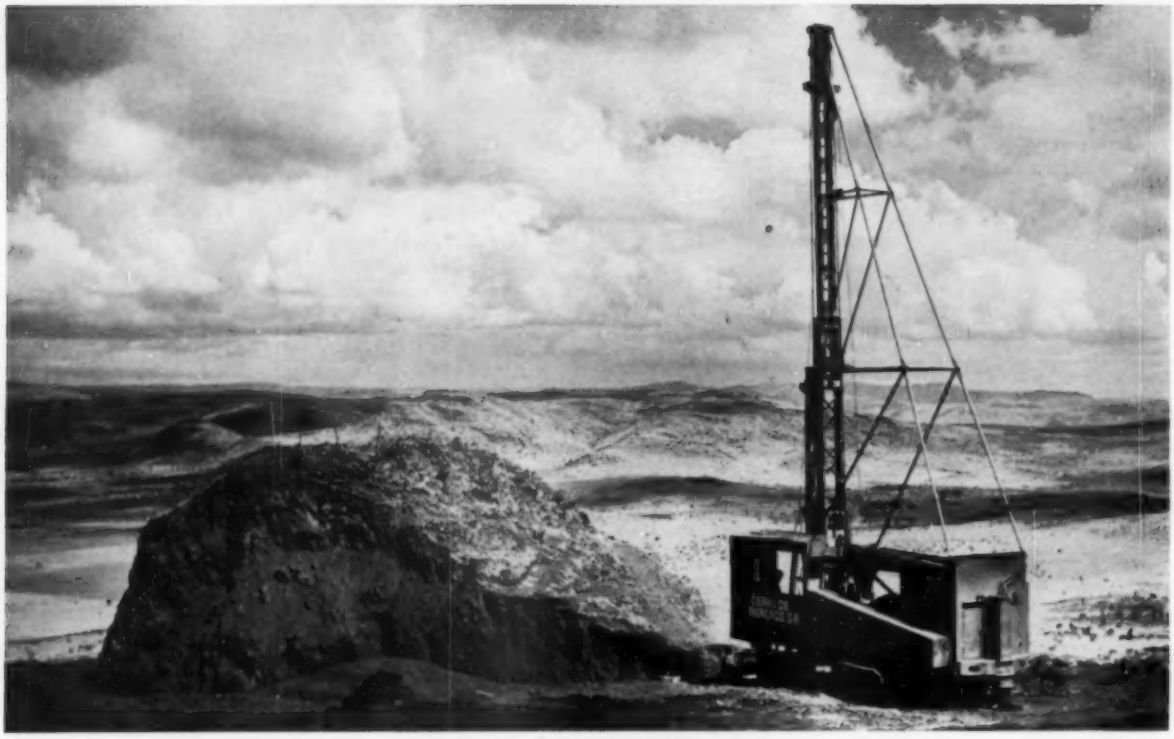
out, had to close up tight in short work sections, so that the material could be dug and then braced before it had a chance to cave. It is easier written than done. Much of the caving sand was so treacherous that it practically flowed in on a flat slope of repose, almost as fast as the machines could muck material out. Not until the construction crews sheeted each side of the ditch solidly with plywood facing and then braced that facing heavily with 4 x 6 and 6 x 6 timbers were pipe crews able to make a finegrade and lay the line. Even then, they had to skip-place gravel in the ditch bottom. The job lasted six months even though it was an unusually good summer season, and turned out to be so rough that everyone in the company would just as soon forget it, even though a profit was realized.

Most excavation jobs go better. The executive management of the firm has seen to that. Because SS&G is such a diversified operation, it is the most natural thing in the world for the construction division to bid almost exclusively on utilities work. Reasoning behind this is sound. When Owner-Manager Fred Anunsen started the firm many years ago, it was strictly a sand and gravel outfit. Today, under the leadership of Bob Brady, assistant manager, Thomas B. Hill, excavation superintendent, business has expanded along widely diversified lines, which tie-in well with a construction setup geared to installing utilities.

For example, the firm's subsidiary companies, wholly or partly owned, now include Marion Polk Materials Co., which handles production of concrete sands and aggregates. Another subsidiary firm, Salem Heavy Hauling Co., does heavy hauling and rigging throughout Oregon. A paving division, known as American Asphalt Paving Co., also is a part of the setup. Although these lines are diversified, the

Continued on page 70

Bins which feed the hot-mix plant are kept supplied with aggregates by a rubber-tired Hough front-end loader.



One of Cerro de Mercado's two 50-T churn drills puts down holes 67 feet deep.

Mexico's Mountain of Iron

by Mary Saint Albans

THIRTY-FIVE years after Cortez conquered Mexico (1519-'21), one of his captains, Vazquez de Mercado, planted a cross on the highest point of a mountain of iron located a mile from an Indian town. That town now is colonial-styled Durango, capital of the state of Durango in central Mexico.

Indian tales of a gigantic mound of silver had lured Vazquez de Mercado to take a 400-mile trip over mounatins and through deserts to Durango from the plundered Aztec stronghold of Mexico City. He was grieviously disappointed. Less than a decade later, however, Indians under Spanish masters were digging out Durango's iron ore with pick axes and conveying it on burros to a crude hand smelter.

After four centuries, modern equipment replaces picks and burros at Cerro de Mercado.

Modernize Methods

More than four centuries passed before these methods changed appreciably. In 1920, as its need for iron ore began to increase, the Monterrey Iron and Steel Co. purchased the property. Production on the property began in 1934 under the name of Cerro de Mercado, S.A. Production was about 100 tons a day. Equipment included an Ingersoll-Rand compressor, rock drills and handcars. With the installation in 1936 of two Allis-Chalmers Superior McCully crushers and an aerial tramway, production increased to 600 tons per day.

Two years ago, large blast-hole drills, power shovels and dump trucks were obtained for the mine. Mechanized crushing, conveying and loading operations began about a year ago. Carlos F. Maldonado, Cerro de Mercado's general manager, designed the installations.

Engineer Isaac Rubio, superintendent of the mine, took me in a Ford pickup over a long switchbacking gravel road to where the ore was being extracted. Two Bucyrus-Erie 50-T blast hole drills, one working on a bench 60 feet above the other, churned holes to a depth of

Cerro de Mercado's ore is dug out and loaded by two 2½-yd. shovels, one of which is shown at work. Shovels, blast hole drills and dumps were obtained two years ago.

A load of ore is dumped by a Euclid into the grizzly leading to the crusher.

Rock is further reduced by two workmen operating Ingersoll-Rand jackhammers.

67 feet. The holes are 18 feet apart and are 18 feet from the edge of the bench. Eventually, the mountain will be ribbed with 13 benches, each 60 feet high. Between 18 and 20 holes are shot at one time with DuPont dynamite. These blasts each dislodge about 65,000 tons of material. Secondary breakage is handled by Ingersoll-Rand jackhammers powered by a stationary Joy Sullivan compressor.

Equipment Lineup

Three 2½-yd. Manitowoc 3500 shovels load ore to 25-ton Euclid end dumps. The shovels and dumps all have Cummins engines. A Caterpillar D8 tractor pushes recently blasted rock into better position for shovel loading. A second Cat tractor clears overburden on the shelf above. A Cat Traxcavator, which usually works on stockpiles below the conveyor system, sometimes helps load Euclids on the benches.

Loaded Euclids hurry around the side of the mountain to dump their loads into the grizzly leading to the Allis-Chalmers gyratory crusher, below which

Continued on page 72

This Caterpillar D8 bulldozer pushes overburden into better position for shovel loading. Mine will eventually have series of thirteen 60-ft. loading benches.

News from the Field

Alaska Corps is Busy

Now 11 years old, the Alaska district of the U. S. Army Corps of Engineers has a construction program nearing the $1 billion mark. Summer projects ranging from harbor improvements to Nike guided missile sites stretch from Ketchikan in southeastern Alaska to the far Arctic coast.

The Alaska district's headquarters are Elmendorf Air Force Base. Col. P. V. Kieffer, Jr., is Alaska district engineer. The district has responsibility for U. S. Army and Air Force construction throughout the Territory and also civil works projects.

Among the biggest of the Alaska district's new defense projects this summer will be construction of six new Distant Early Warning stations (DEW-Line) for the Air Force along a 1,000-mile stretch of the Aleutian Islands. Another project will be the first Alaskan army Nike guided missile stations in the Eielson Air Force Base and Fort Richardson areas. Together, these two important projects will account for much of the more than $127 million in estimated construction work for the Alaska district this summer.

In the civil works field, a variety of new jobs will include the flood control project at Juneau to provide protection from flash floods in Gold Creek; and harbor projects at such widely scattered points as Valdez, Ketchikan and Kodiak.

Litle New B-E Chairman

William L. Litle was elected chairman of the board and president of Bucyrus-Erie Co., South Milwaukee, Wis., by the board of directors on April 30. Litle, who has been president of Bucyrus-Erie since 1952, has been associated with the company for 31 years. Before becoming president he had been executive vice president for two years. He has served on the board of directors since 1947.

In other management changes, Lyle S. Cline was elected vice president and

W. L. Litle

secretary and David W. Harris was elected vice president. Cline has been secretary for five years and Harris joined the company as director of industrial relations last year.

William W. Coleman was named honorary chairman of the board. His retirement as chairman of the board and of the executive committee comes after 52 years of association with the company. He was president of the company or a predecessor for 32 years beginning in 1911. He has been chairman of the board since 1927 and of the executive committee since 1941.

Albert S. Puelicher, Milwaukee, was elected chairman of the executive committee in Coleman's place. All other company officers were re-elected.

Engineering Course

An educational course for the training of civil and highway construction technicians will be started at Wentworth Institute, Boston, Mass., beginning in September.

Andrew Canzanelli will be in charge of the course, which will be a two-year program leading to a degree as an associate in engineering. Graduates will be prepared to enter career positions with engineering firms, public utilities, port authorities and municipal, state and federal engineering departments.

AMC Meeting Set

More than 2,000 metal mining men and industrial mineral producers will outline their views on national mineral policies and discuss the latest advances in mine and mill operating practices at the 1957 Metal Mining and Industrial Minerals Convention of the American Mining Congress at Salt Lake City, Utah, Sept. 9-12.

State and district chairmen of the program committee have been named to serve with A. H. Shoemaker, national program chairman, in drafting a program for the meeting. Shoemaker is general manager of Homestake Mining Co., Lead, S. D. The program is expected to include discussions of such subjects as labor relations, mine taxation, public lands, policies, government mineral and stockpiling programs, measures to maintain a mobilization base for domestic mineral industries, urani-

Continued on page 45

"Then when they discovered rock on this pipeline job, I sold them some pneumatic drills cradled on sideboom tractors—are you sure you're interested in my work?"

"THIS IS THE MACHINE WE'VE BEEN LOOKING FOR!"

The D9 is not only a great bulldozer but in good material it loads a DW21-Scraper unit in 25 to 30 seconds for Copper State Construction Co.

The CAT* D9 Tractor shown here is building a clover leaf on U. S. 70, some 20 miles east of Globe, Arizona. Copper State Construction Co., of Mesa, Ariz., has the 70,000-yard contract. On hauls of 1200 to 2200 feet each way, three rubber-tired rigs are handling about 4500 cubic yards per day, with cycle times of about 4½ minutes. In tough, unripped material tandem pushers are used, loading a DW21 and Scraper in about 30 seconds. Where material is better, the D9 alone does the loading job in 25 to 30 seconds.

Superintendent Roy Hale says: "This D9 is the machine we've been looking for. We like the torque converter. It gives smooth operation and will lengthen the life of the tractor."

Much of the new D9's high work output is due to its Cat Diesel Engine—the first Turbocharged engine on any track-type tractor. It now develops 320 HP at the flywheel. The D9 is available with torque converter or exclusive oil clutch, to suit your needs. And it offers in-seat starting, hydraulically boosted controls, smooth, constant power drive for cable controls and excellent operator visibility. It's as easy to handle as many smaller tractors.

See your Caterpillar Dealer and let him *prove* that this "King of the Crawlers" can do more work at lower cost on *your* job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

Announcing

AUTOCAR

A rugged off-highway dump truck with planetary-gear rear axle . . . capable of handling 15-ton payloads at speeds up to 39 mph

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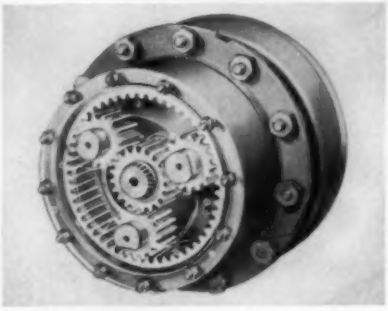
AP-15



THE HEART OF IT is the planetary-gear rear axle. A "sun" gear at each end of the rear axle shaft meshes with three pinion or "planet" gears which in turn help drive the rear wheels.

AUTOCAR TRUCKS

Autocar Division of the White Motor Company
Exton, Pa.

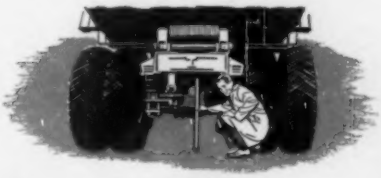
Autocar

WHAT ARE THE ADVANTAGES OF THE AUTOCAR PLANETARY AXLE?

1. First and foremost, it provides long gear and shaft life for a giant truck.

2. It decreases torque load on axles and differential.

3. Owing to multiple gear-tooth contacts, it provides high torque capacity.



GOOD GROUND CLEARANCE, TOO. By dividing the axle ratio between the gear carrier mounted at the center of the rear axle and the planetary reductions at the outer ends we reduce the main drive gears in diameter and gain substantially greater ground clearance under the housing bowl.

15 TONS AT 39 MPH. The AP-15 hauls its big payload at 39 mph. It permits a fast trip cycle and thus hauls many more tons per working day.

AUTOCAR DRIVER CAB AND POWER STEERING make the AP-15 easy on the driver. The Driver Cab with its fully adjustable seat, form-fitting back, and accessible controls permits the driver to handle this hardworking truck all day long and like it.

AND, THIS AUTOCAR IS BUILT TO LAST

Nuts and bolts instead of rivets throughout. Reinforced, heat-treated alloy steel frame for flexibility as well as great strength. Replaceable bushings to save wear on more expensive major components.

For hauling fill, rock, potash, copper or coal, you can't beat this big Autocar AP-15. Ask your White-Autocar dealer for further information or write direct to us.

ONE-TWO PUNCH for Rocky Roadwork

1 GYRO-FLO COMPRESSOR and

2 FM-4 WAGON DRILLS

cut road-building costs three ways

Here's a high-powered rock-drilling combination that can really set the pace for both speed and economy in modern road work. The proved *dependability* and smooth, trouble-free performance of the Gyro-Flo rotary compressor keeps it *on the job*, with virtually no down-time for attention or servicing.

The versatility and easy mobility of the Ingersoll-Rand FM-4 Wagon Drills means fast, easy setups on any type of ground. Their tremendous striking power, positive rotation and exceptional hole-cleaning ability add up to maximum drilling speed, even in the hardest rock.

And, used with long-lasting, fast-drilling Ingersoll-Rand Carset Jackbits, this combination has no equal for sustained high production at lowest overall cost per foot of hole or per mile of highway construction.

Whether you need one, two, or three of these heavy-duty FM-4s, there's a Gyro-Flo compressor of ample capacity for the job—a 315, 600 or 900 cfm. The Gyro-Flo line also includes three other sizes, down to 85 cfm, for operating smaller air tools. Ask your I-R representative for complete information on this cost-cutting Contractors' Combination.

Ingersoll-Rand
11 Broadway, New York 4, N. Y.

IR CONTRACTORS' COMBINATION

2-503

News . . .

Continued from page 40

um mining and other important matters of national policy which affect mining.

Active in plan arranging for the meeting is L. F. Pett, general manager of Utah Copper Div., Kennecott Copper Corp., Salt Lake City. He is chairman of the western division of the American Mining Congress.

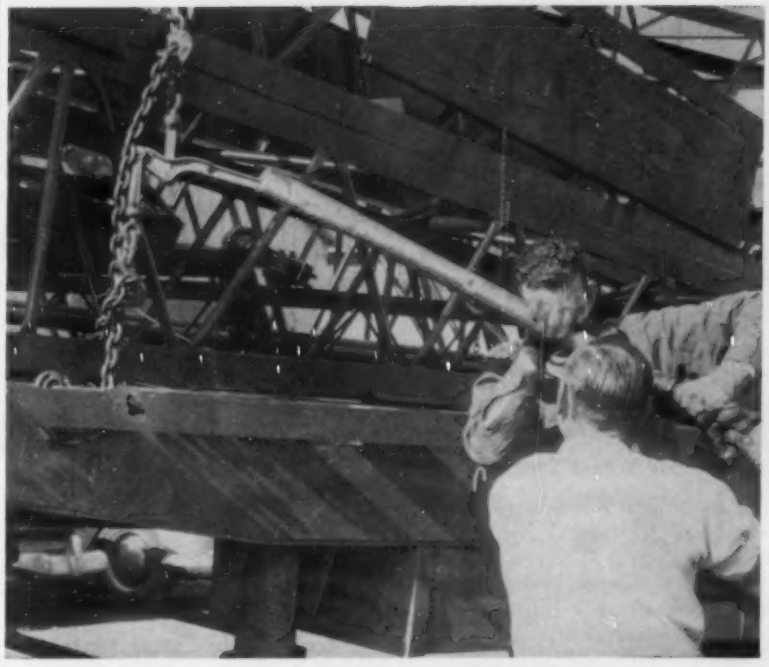
Johnson Heads Moles

Richard A. Johnson has become the first "second generation" president of The Moles, an association of tunneling and heavy construction engineers and executives. Johnson, president of the Arthur A. Johnson Corp., was elected at the annual meeting of The Moles in New York City last month.

Richard A. Johnson

Johnson's father, Arthur A. Johnson, was president of The Moles in 1944. Richard A. Johnson was an outstanding athlete at Flushing (N. Y.) High School and was graduated from Lafayette College in 1924. He immediately was named foreman on the Central Park West subway construction project. He became president of the company in January 1955. He and Mrs. Johnson live in New York City. A son, Richard A., Jr., is with the company.

Other Moles officers elected were: Howard A. Collins, Howard A. Collins Construction Co., first vice president; Mansell L. MacLean, MacLean-Grove & Co., Inc., second vice president; Richard M. Johnsen, The Foundation Co., re-elected treasurer; Gilbert M. Serber, Stock Construction Co., re-elected secretary; and John A. Lambert, McKiernan-Terry Corp., sergeant-at-arms.



THIS LOAD WILL STAY PUT . . . ACROSS TOWN — ACROSS COUNTRY

There's no doubt about the safety of this load—or any load secured with Lebus Loadbinders. Completely drop forged, then heat treated for even more strength and durability, the millions of Lebus Loadbinders already in use have proved their ability to tie down loads of every description—keep them absolutely secured without failure *until they're released!*

You get an idea of this loadbinder's strength from the photo above. Two big truckers throw their combined weight on a long cheater without fear of breaking or bending any part—they know that, from handle to hooks, the Lebus is the strongest Loadbinder manufactured. You're assured of safe, dependable performance because each Loadbinder is thoroughly proof tested before shipment.

Equally important is the Lebus Loadbinder's convenience and safety of operation. Once the binder is locked in position, it can't snap open. Even shifting loads won't spread the handle! Exclusive Lebus designed ball and socket swivel is drop forged—won't pull apart regardless of the load! Get complete details on the number one loadbinder in every industry from Crosby Laughlin Lebus Distributors!

WORKERS PROTECTED

Workers and materials are protected with Crosby-Laughlin Safety Hooks that keep the load in place *until it's released!* A rust-proof, non-jamming latch and spring provides a simple but safe method of keeping rings and slings

on the hook, even when the load is set down! Tough Crosby-Laughlin Hooks are drop forged then carefully heat treated. The result is superior strength and quality from a design that eliminates excess weight. Crosby-Laughlin safety and standard hooks are available in eye, hoist, shank and swivel types to give you the exact design you need. Capacities range up to 20 tons! See your nearby distributor for catalogs and technical information on a complete line of fittings!

World's Most Complete Line of Fittings For Wire Rope and Chain

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Equipment You Ought to Know About

Six-Wheel Truck

Manufacturer: International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Claims: A new heavy-duty International six-wheel truck designed especially for off-highway operation—the model VF-230—has been introduced by the Motor Truck Div. Gross vehicle weight rating is 60,000 pounds.

The V-8 powered unit is built to meet the requirements of severe off-highway operation and to absorb the shock of loading by large shovels and draglines. It can mount 8 or 9-yd. concrete mixer bodies as well as carry maximum payloads in earthmoving, stripping, heavy construction, mining and quarrying and other heavy hauling operations.

The VF-230 is powered by the new proven International truck-type V-549 engine rated at 257 hp. All chassis components have been carefully matched to the powerful engine to assure outstanding performance and long life.

Standard equipment includes a 15,000-lb. front axle, 46,000-lb. rear bogie, hydraulic full-power steering, air brakes, 12-volt electrical system, 15-in. clutch, 60-gallon right-side step fuel tank and heavy 2⅜-in. steel grille guard.

A 98-in. Space Saver cab is available as optional equipment for maximum front axle loading. A wide range of axle ratios and transmissions permits tailoring of truck power requirements to fit a specific job.

Standard wheelbase is 175 inches.

Newest and largest model in the International V-line of heavy-duty trucks, the VF-230 is similar to the model RF-230 that has six-cylinder gasoline engine power and the diesel-powered RDF-230-H.

Trailer Lubrication System

Manufacturer: LaCrosse Trailer Corp., LaCrosse, Wis.

Claims: An automatic lubrication system is now available at additional cost on all new LaCrosse low-bed trailers from 8 to 75-ton capacity.

The Multi-Luber system, supplied by Lincoln Engineering Co., St. Louis, Mo., is an automatic method of precision lubrication, controlled through brake application of the running gear. An interconnection through the air supply from the relay valve makes the automatic action possible. A lubricant reservoir of four gallons is supplied, sufficient for 90,000 miles.

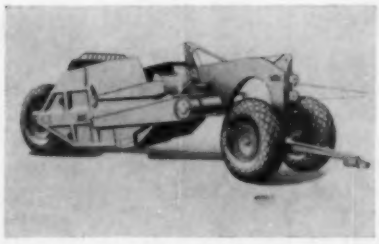
Advantages claimed for installation of such a system include lower trailer maintenance cost; increased operating efficiency of the equipment; increased service life of bearings and moving parts; and prevention of waste and contamination of lubricant used.

Scraper, Traxcavator Models

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: The availability of a new large-capacity scraper, designed for use with D8 and D9 tractors, has been announced by Caterpillar.

The No. 491 scraper offers increased pay load capacity to provide the earthmover with a high yardage scraper designed to match the power of the large track-type tractor. The new model replaces the No. 90 scraper in the company line, and its payload capacity of 82,000



pounds is 12,000 pounds greater than the former model. The scraper has a struck capacity of 27 cubic yards and a heaped capacity of 34 cubic yards, representing an increase in yardage capacity of 26%.

Another feature of the No. 491 is an increased apron opening, which provides 15 additional inches of opening over its predecessor model, facilitating thorough, positive ejection. This feature, combined with higher bowl sides and changes to the shape and height of the dozer-type ejector, permits easy handling of the scraper's larger loads.

To combine stability with good flotation, tubeless tires are used. The front tires have a 24:00 x 29, 24-ply rating, and the rear tires a 27:00 x 33, 24-ply rating.

The new scraper retains many proven features of the company's scraper line, including the three-piece cutting edge with stinger bit center section, designed to facilitate easy digging and penetration; good visibility to the cutting edge from the operator's seat; low maintenance costs; and high maneuverability.

Another new Caterpillar product is a side dumping bucket attachment for Traxcavators. Designed to give added versatility to the company's line of

front-end loaders, the new attachment provides side dumping ability, without

Continued on page 50

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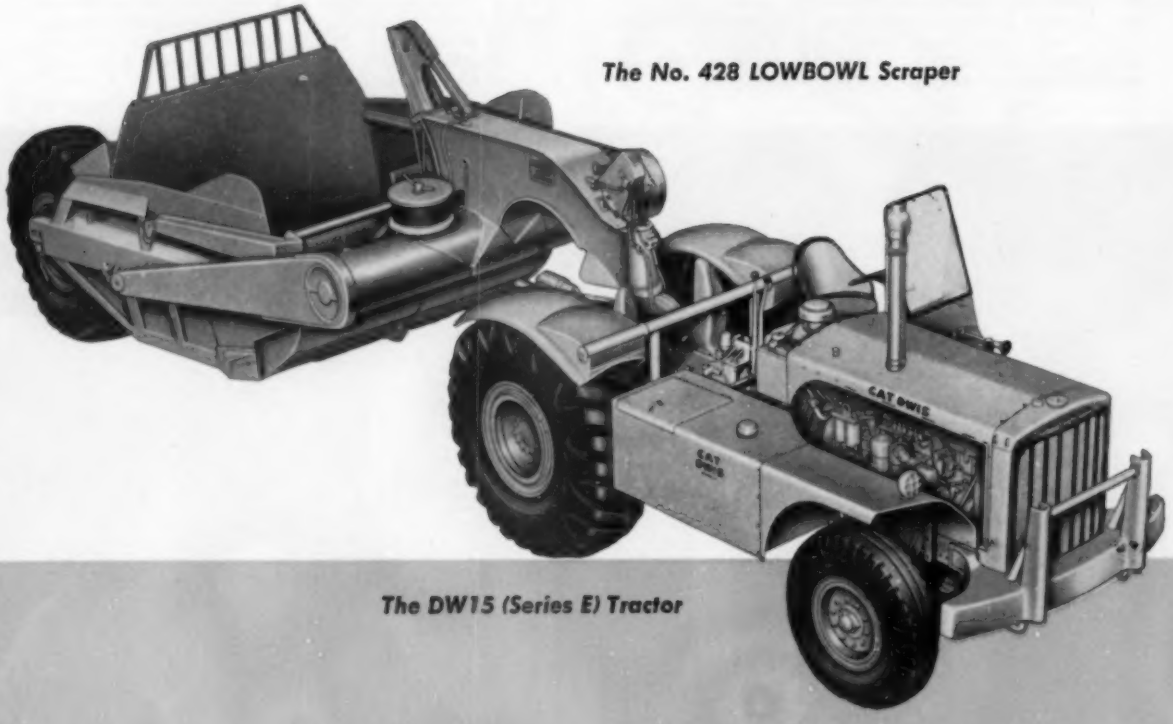
CATERPILLAR ANNOUNCES

NEW DW15 (SERIES E) AND NEW No. 428 LOWBOWL SCRAPER



The No. 428 LOWBOWL Scraper

The DW15 (Series E) Tractor

Here's a new Cat team loaded with features that add up to one thing—A HIGHER PRODUCTION RETURN ON YOUR INVESTMENT. See your Caterpillar Dealer for details on this great team's performance.

GET THE STORY IN BRIEF ON THE OPPOSITE PAGE ▶

A GREAT TEAM: The performance of the DW15 (Series E) Tractor and No. 428 Scraper can be summed up simply: bigger loads—faster.

FACTS ABOUT THE DW15 (SERIES E) TRACTOR

Around the world, the DW15 has proved that it can move material faster and more profitably than competitive machines in its class. Now there's a new DW15 (Series E) to give you even higher production. This is the story:

ENGINE: A new Caterpillar D326 Engine, designed especially for the DW15 (Series E), develops 200 HP (maximum output capacity).

And Caterpillar research has produced a 23% torque rise in this new engine! This means that high tractor rimpull is maintained through a wide range of travel speeds in each gear, and the need for gear changing is decreased. In fourth gear, for example, over 3,000 pounds of rimpull are delivered at travel speeds from 9 MPH all the way to 18 MPH. A new engine, yes—but with these traditional Caterpillar advantages: uses inexpensive No. 2 furnace oil without fouling; needs no fuel system adjustments; requires no cleaning of fuel injection valves.

TRAVEL SPEED: The DW15 (Series E) offers ten speed selections, from 2.7 to 37.2 MPH. But, more important, it provides four-wheeled sure-footedness—*the ability to use the speed on the job.* Operators ride with more comfort, feel greater stability. They travel faster, and in safety.

MANEUVERABILITY: Four-wheeled stability means faster cycle time because the DW15 (Series E) can make short radius turns at higher speeds. It can turn without stopping inside a 35-foot diameter and in a smaller area through use of a turn-back-turn maneuver.

VERSATILITY: The DW15 (Series E) provides versatility that far surpasses similar sized two-wheeled machines. It can be unhitched from its scraper and used as an independent unit to tow compactors, water wagons or other units, and it can be teamed with the Athey PR15 Wagon for rock hauling work.

FACTS ABOUT THE No. 428 LOWBOWL SCRAPER

CAPACITY: Struck—13 cu. yd.; heaped—18 cu. yd.

ADVANCED DESIGN: There is more to Caterpillar's exclusive LOWBOWL design than a low bowl profile. Width and length proportions are designed to give maximum loading efficiency. And every component—particularly the apron, ejector, cutting edge—is likewise designed to do its part in achieving capacity loads.

LOADABILITY: The final result of this careful engineering is this: bigger loads—faster. LOWBOWL design gives the new Caterpillar No. 428 Scraper a faster loading rate because incoming material meets less material resistance and less friction from the load already in the bowl. While other scrapers are still in the cut struggling for the last few yards of their load, the new Cat units are on their way to the fill—with big pay loads!

NEW FEATURES: Outstanding new features of the No. 428 include: increased ground clearance—for high-speed travel in rough going; increased apron lift—for faster ejection of any material; large area pushblock—for better pusher contact.

NEW TIRES FOR THE DW15-No. 428

Both the CAT* DW15 (Series E) Tractor and No. 428 Scraper feature 26.5-25 wide-section tubeless tires—the product of extensive co-operative research by Caterpillar Tractor Co. and leading tire manufacturers. Tubeless tires offer load-carrying capacity comparable to conventional tires at a *reduced inflation pressure.* This gives better flotation and traction while decreasing rolling resistance. The wider tire treads take a "grouser like" bite, making more efficient use of engine horsepower. And tubeless tires eliminate 80% of the down time caused by tire failure.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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ONE GOAL: To concentrate our capabilities, resources and experience on the design, manufacture, distribution and service of job-tested heavy equipment.

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New Equipment . . .

Continued from page 46

sacrificing efficiency in standard applications.

The Caterpillar No. 955 Traxcavator is the first model in the line supplied with the attachment.

The prime advantages of the side dumping bucket are in allowing in-line loading, eliminating the need for constant turning in order to dig and load. It also serves to lower maintenance cost by reducing wear on track, track parts, steering and master clutches and idlers, due to turning.

Side-dumping of the bucket is accomplished by the use of a hydraulic cylinder, mounted on the bucket carriage. The bucket is hinged to the carriage, and is firmly locked in place when in the conventional digging position.

The side dumping end of the 1½-yd. bucket is ramped at a sufficiently steep angle to allow even sticky material to be dumped easily. The bucket is also widened over the width of the standard Traxcavator bucket by extending the dumping end approximately 18 inches, allowing increased side-casting distance to be obtained.

Mounted on a ripper-equipped Traxcavator, the bucket is suited to such jobs as road improvement and maintenance and ice and snow removal. For example, in ripping and clearing material from road shoulders, the side-dumping feature facilitates easy truck loading. Both the loading and carrying vehicles can operate in parallel directions.

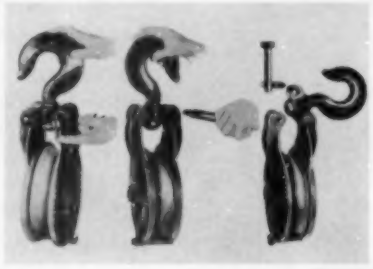
Machines equipped with the side dumping bucket retain the lift kick-out, bucket positioner and one-hand bucket control features.

Rigger-Slusher Block

Manufacturer: Sauerman Bros., Inc., Dept. EE, 622 S. 28th Ave., Bellwood, Ill.

Claims: A new heavy duty rigger-slusher block is now available from Sauerman. This new addition to the line of Durolite blocks is lighter than comparable blocks and practically shatter-proof. Made of high quality alloy steel, it will withstand 14-ton dead loads without damage. A wide flange permits use of up to and including ¾-in. wire rope.

In tests the frame has been bent through terrific impact, then straightened with a sledge hammer. The block has wide applications for rigging and in the mining field because of its toughness and light weight. A cast bead on



the housing keeps rope in groove, even when block is working in a horizontal position. Quick opening design permits easy handling in cramped quarters.

The rigger-slusher Durolite block weighs only 44 pounds and is available with roller or bronze bearings. Sheave diameter is 10 inches. Overall length is 23 inches with swivel hook and 19 inches with stiff shackle.

Loader-Backhoe

Manufacturer: J. I. Case Co., Racine, Wis.

Claims: The Case model 320 is the first in a new series of wheel tractors designed for heavy-duty industrial use. The entire unit — tractor, front-end loader, backhoe and even the engine — is built and factory-mounted by Case.

The new tractor has distinctive recessed headlights and a sturdy steel bumper and radiator guard. Strength is provided by a fabricated steel wrap-around sub-frame, which protects engine and transmission and supports mounted equipment. The one-piece, drop-forged steel axle is said to be far stronger than conventional axles.

The tractor is powered by a high-

torque 148-cu. in. Case industrial engine which is reported to have the highest compression ratio in its horsepower class. Power steering and a new high-speed shuttle transmission are also available. The transmission enables the operator to go forward, or back up (at 27% faster reverse speeds) without shifting gears. A deluxe industrial seat, which can be reversed for operating either the loader or backhoe, is standard on all backhoe-equipped models. Both front-end loader and backhoe are of stress-engineered box-welded steel plate construction, with heavy reinforcements and replaceable hardened steel bushings at all points of stress.

An extra-large pump furnishes ample hydraulic power for both tools. The ½-yd. loader bucket features automatic power leveling, 26° break-out angle, and 60° grading angle with twin-cylinder hydraulic control. Special backhoe features include foot-controlled 180° swing, 18-ft. 7-in. reach, and 12-ft. 6-in. digging depth, and telescoping hydraulic stabilizers. The backhoe can be quickly disconnected for using loader alone.

Chain Repair Link

Manufacturer: Kensington Steel Div., Poor & Co., 505 Kensington Ave., Chicago 28, Ill.

Claims: A new, easy-to-install "missing link" for repairing hoist and drag chains has been developed by Kensington. The link is notable because of its simplicity and the ease with which it can be assembled. It consists of two identical half links and a combination key and wedge.

The half links are inserted through the ends of the chain to be joined; then when the wedge is driven into place, it automatically bends the key and thus locks the link together. No welding, burning or riveting is needed.

Kensington repair links are cast of "Supermang," a high manganese alloyed steel specially developed for its extra strength and ability to resist wear. According to the manufacturer, it is as

Continued on page 52

Prescription for Profit...

EUCLID S-12 SCRAPER

with these pay-off advantages

- **CAPACITIES**
  12 cu. yds. struck . . . 14 yds. heaped 3:1 . . . 16 yds. at 1:1 slope
- **EFFICIENT POWER**
  218 h.p. with 5-speed transmission is geared to working ranges . . . top speed loaded is over 21 m.p.h. for fast cycle time.
- **MORE TRACTION**
  Standard No-Spin differential eliminates wheel spin . . . 26.5 x 25 tires provide extra traction and capacity.
- **HYDRAULIC LEVER ACTION FOR SCRAPER OPERATIONS**
  Fast-acting, trouble-free . . . eliminates downtime and expense of cable replacement. All 4 hydraulic jacks are interchangeable.
- **MORE MANEUVERABILITY**
  Push-pull 90° full hydraulic steering for non-stop turns in 31 ft.
- **MORE EFFICIENT, LONG-LASTING CUTTING EDGE**
  Four sections are reversible and interchangeable for longer life . . . adjustable for most efficient loading in any scraper material.
- **LOWER MAINTENANCE COSTS**
  More on the job availability because major components are easily accessible . . . clutch and differential can be replaced in 1/3 the usual time for scrapers, transmission in 1/8 the time.
- **TOPS FOR DEPENDABILITY AND PERFORMANCE**
  Pay-off performance proved by contractor preference for "Eucs" . . . the fastest growing line of scrapers in the industry.

See your Euclid dealer for more facts and figures and a production cost estimate on the S-12—you'll find that Euclids are your best investment.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

MORE VERSATILITY . . . 13 yd. (struck) Bottom-Dump is interchangeable with scraper bowl for flexibility to meet changing work requirements with minimum investment in equipment.

Euclid Equipment

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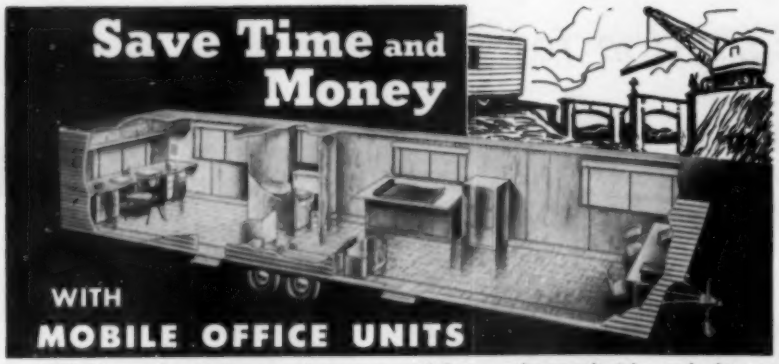

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New Equipment . . .

Continued from page 50

strong or stronger than other links in the chain, because the parts are cast rather than welded together.

Available in 1 to 3-in. sizes, Kensington repair links will fit all standard cast manganese drag and hoist chains.

Off-Highway Hauler

Manufacturer: Autocar Div., White Motor Co., Exton, Pa.

Claims: A 600-hp diesel rear dumper for off-highway use has been developed by Autocar. Fast, with speeds up to 33 mph, and engineered for 50-ton payloads, the tandem-rear truck is designed for the mining, quarrying and construction fields. It is the first truck having more than 400 hp in a single engine.

Designated the AP-40, it is the third in the AP line to be introduced by Autocar since late 1956. The first two, also rear dumpers, were the AP-15, with a rated payload of 15 tons, and the AP-25, for loads up to 25 tons.

Planetary-gear drive rear axles, characteristic of the line, reduce torque loads on the differentials and axle shafts. The planetary-gear reduction is accomplished at the outer ends of the tandem axles.

The AP-40—more than 13 feet high, 31 feet 10 inches long and equipped with a 27-yd. body—is powered by a V-type, tubocharged 12-cylinder Cummins diesel, an engine previously used only in locomotives and as a stationary power plant for oil-field operations. The engine has a rating of 600 bhp at governed 2,100 rpm. It has a 5⅛-in. bore and 6-in. stroke. Compression ratio is 13.5 and piston displacement is 1,486 cubic inches. Cylinders have wet sleeve liners and aluminum-alloy pistons. The turbocharger is exhaust driven.

"Around here, Jenkins, safety's first, finishing the job on time is second and that's third!"

The engine, which has a 30-hp starting motor, gives the truck a horsepower-to-weight ratio of 275 to one. Adaptation of the engine to the AP-40 was made possible by recent development of a transmission, the Fuller R-1550, rugged and flexible enough to efficiently utilize the power developed.

An important design feature is an all-welded, box-construction frame of 1-in. carbon steel designed to resist the torques encountered under severest off-highway conditions. An offset-mounted cab, engineered for driver safety and comfort, has the adjustable steering column introduced in the AP-25.

The AP-40 drives on all four wheels in the tandem rear. If either set of wheels loses traction, an air-powered lock applied on an interaxle differential by the driver from the cab, blocks out torque loss, permitting the other axle to continue driving.

Gross weight of the AP-40—with 40-ton payload—is 85 tons.

Triple Tamper

Manufacturer: LeRoi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.

Claims: A new triple tamper, with a built-in line oiler to assure positive oil feed while the tamper is in operation, has been marketed by Le Roi.

The OT11 tamper has a handle grip throttle valve incorporating a safety snap action which shuts off the air supply when the lever is released. The safety snap shut-off action increases operator safety and reduces lost-time accidents. A plug type throttle is available as optional equipment.

Operator safety is increased also with the long handle bars, which have comfortable handle grips. The air hose connects to the back of the right handle

Continued on page 54

These jobs profited from Bucyrus-Erie Cranes . . . yours can too!

Whatever the job, it can profit from the extra working ability of a Bucyrus-Erie lifting crane. From the ground up, these machines are designed and built to put power and strength to work hoisting and placing loads quickly and smoothly with maximum efficiency.

See your Bucyrus-Erie distributor soon and have him give you all the facts on cranes with lifting capacities ranging from 3 to 60 tons.

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BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

DENVER, COLO. Tractor-type crawlers provide extra clearance for passing over rocks, boulders, etc. Deep grousers provide sure footing for maneuvering on mountainous terrain. This Bucyrus-Erie 22-B reaches out with a 50-ft. boom and accurately pours its 1-yd. bucket of concrete in the construction of a guided missile plant near Denver.

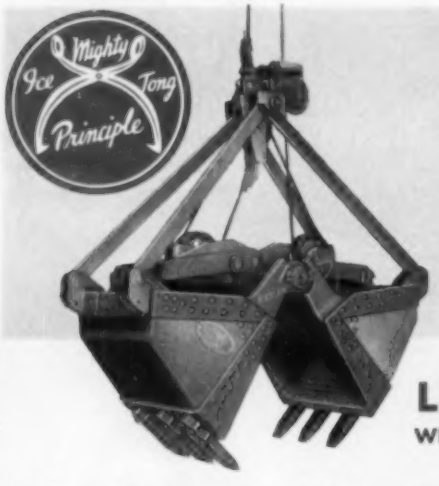
PASADENA, CALIF. High lifts in erecting a steel bridge are handled by this Bucyrus-Erie team — an 88-B equipped with a 160-ft. boom-jib combination and a 38-B with 110-ft. boom-jib combination. Users recognize Bonus Quality in the balanced performance and daily dependability of Bucyrus-Eries.

COLUMBUS, OHIO. Handling structural steel is one of a variety of light- and heavy-duty lifting jobs assigned to this Bucyrus-Erie 51-B in the construction of a hospital. You'll find all the essentials of profitable crane service in Bucyrus-Eries — speed, power, smooth operation, long reach, stability, and low cost maintenance.

LOUISVILLE, KY. This Bucyrus-Erie 54-B takes full advantage of its stability and 100-ft. boom in placing steel plate during the construction of a pumping station for flood control. The crane is also used here for clamshell service and is also convertible to dragline, dragshovel, or shovel.

DETROIT, MICH. Rugged 24-hr. service on tough tunnel excavation work in storm sewer construction is a natural for this sturdily-built, steady-working Bucyrus-Erie 38-B. It is removing a mud-box filled with muck from the tunnel shaft.

TODAY'S BUCKET IS THE KIESLER!



IT DIGS
DEEPER
IT DUMPS
FASTER

LEVERAGE . . .
WHERE IT REALLY COUNTS!

Years ago there was only one way to move freight cars — by brute force. Today there are power winches that do the job faster and easier. So it is with clam shell buckets: today your excavating or rehandling jobs can be done faster and with less effort . . . with a KIESLER bucket!

THAT THE KIESLER BUCKET DOES DIG DEEPER AND DUMP FASTER THAN ANY OTHER BUCKET IS NO IDLE CLAIM! Here are the facts: It digs deeper because the powerful leverage is applied through TWO lever arms with EQUAL force to BOTH shells. This digging force, unequalled by any other bucket, is achieved without unnecessary parts to the line, with less cable, and without extra dead weight.

The KIESLER bucket dumps faster because of the exclusive shell design which gives a more positive dumping angle the instant that the jaws start to open (not only when the jaws are wide open). Thus, the operator can eliminate spillage by spot dumping. This results in minimum handling costs and affords more time for additional work.

The KIESLER bucket with its rugged construction and powerful design has what it takes to produce the greatest yardage with less effort, and with a minimum in maintenance. Phone or write to learn first-hand how KIESLER can save you time, money and manpower on your excavating or rehandling jobs.

GUARANTEE
Kiesler Buckets are guaranteed to outperform and do a bigger day's work than any other Bucket of equal weight, width and size, when properly reeved and operated.

JOS. F.
KIESLER CO.
Since 1892

944 W. HURON ST. • CHICAGO 22, ILL. • MOnroe 6-7144

New Equipment . . .

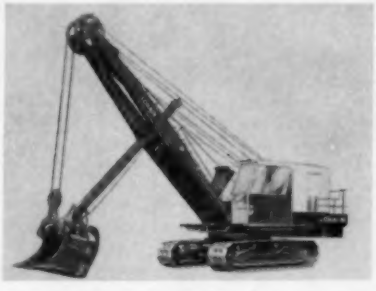
Continued from page 52

grip, preventing the air line from interfering with the operator or tamper butts. The throttle valve is also located on the right handle grip.

The 114-lb. weight of the tamper is distributed to fully utilize the power stroke of the tampers and to make handling easy. The tamper lifts and carries its own weight, making it only necessary to guide it while in operation. It is ideal for narrow trench, close foundation or abutment tamping.

The three tamper butts cover a 70-sq. in. area, compacting the same amount of backfill as five single tampers. The tamper butts are mounted on the piston stems by a locking taper of bolted construction. All major working parts are steel drop forged.

2½-Yd. Shovel-Crane



Manufacturer: Thew Shovel Co., Lorain, Ohio.

Claims: Thew-Lorain has introduced its new model 85A 2½-yd. shovel-crane, incorporating a modern two-color cab with many features for comfort, convenience, safety and operating ease. The new cab has increased glass area for vastly improved visibility in all directions, and includes a sliding overhead sunshade and windows, adjustable to many combinations. It is wider for more inside walk-around space.

Lorain's two-lever, "joy-stick" metered-air controls and "shear ball" mounting are two new mechanical features incorporated in the model. The "joy-sticks" control all turntable operations by feeding metered-air to all turntable friction clutches. "Shear-ball" mounting eliminates all types of turntable rollers, center pin and nut and requires no adjustment. Air control of crawler steering, locking pawls and travel jaw clutch is standard. All friction clutches have built-in air cylinders. Swing, retract and crowd clutches are

Continued on page 56

Bucket teeth and ripper available at extra cost.

TEETH AT BOTH ENDS* BOOST PROFIT!

Production really steps up when this working team moves in—the Allis-Chalmers HD-6G tractor shovel with replaceable bucket teeth and rear-mounted ripper. Here's a job-proved combination engineered by the company that pioneered modern tractor shovels for the construction industry.

When the hydraulically controlled ripper bites in, even hard blacktop has to give. With the help of teeth at the front end, too, tough material is loosened and broken up for fast, easy loading—a full bucket every time.

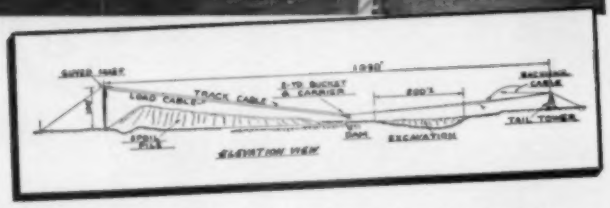
You get more work done in less time because the heavy-duty HD-6G is designed for tough jobs. With 72 net engine hp and six-truck-wheel stability, it offers performance that means efficient production, bigger profits for every hour on the job.

These important advantages are also available on bigger Allis-Chalmers tractor shovels—the 2½-yd HD-11G, the 3-yd HD-16G, and the 4-yd HD-21G . . . to help you meet the needs of your tractor shovel jobs profitably. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

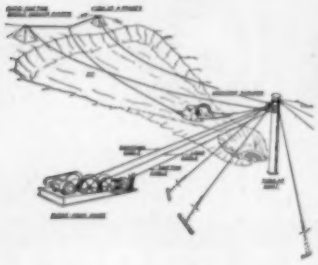
Three Sauerman Methods for Cutting Excavating and Reclamation Costs

DIGGING and CLEARING



Slackline Cableway—A 2-yd. bucket is used to maintain a clear channel to an irrigation project. The cableway digs the hard packed silt and conveys it to a spoil pile on the downstream side of the dam. Method permits removal of silt without wasting water.—*Sauerman News No. 146.*

RECLAMATION TO HOPPER



DragScraper—A 4-cu. yd. DragScraper digs sand and gravel from a wet pit and hauls it 400 ft. to grizzly hopper. This new machine handles increased plant demands in one shift. Two were required with the former installation.

—*Sauerman News No. 144.*

UNDERWATER TRENCHING

DragScraper and Crane—Here's how a DragScraper used with a carrier and track cable can extend the reach of any crane. This arrangement was highly successful in digging a trench for underwater pipe and backfilling after pipe was laid. *—Crane-DragScraper information is available in Field Report No. 228.*

Find out what the Sauerman Method can do for you

Give us details on your operation. Our engineers will give prompt recommendations and work with you to provide the best method for your requirements. Ask for Catalogs A (DragScrapers) and C (Slackline Cableways).

SAUERMAN BROS., INC.
622 SO. 28th AVE.
BELLWOOD, ILL.
Cable: CABEX—Bellwood, Ill

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

New Equipment . . .

Continued from page 54

of the same size and design with interchangeable parts.

Two crawlers are available: one is 15 feet 6 inches long and 11 feet 10 inches wide, and is designed for 48 tons lifting capacity; the other is 18 feet 6 inches long and 13 feet wide, designed for 60 tons lifting capacity. Both crawlers provide two speeds in both directions.

The unit is diesel powered, with torque convertor and tailshaft governor as standard equipment. It is fully convertible to crane, shovel, clamshell, dragline or hoe.

27-Yd. Scraper

Manufacturer: LeTourneau-Westinghouse Co., Peoria, Ill.

Claims: LeTourneau-Westinghouse has introduced a new 27-yd. "Fullpak" scraper powered by its model B Tournapull. The Fullpak design was pioneered a year ago on the firm's medium size, model C Tournapulls.

In addition to the all new scraper, the Tournapull prime mover has been completely restyled. Mechanical advances include such items as a new, tougher, longer-wearing 16-in. double-plate clutch equipped with air assist for easier operation; a heavier, more rugged final drive shaft to withstand extreme shock loads; and a constant voltage transformer and new rectifier in the electric power system which provides high output even at low engine rpm.

A number of improvements have been made to help speed servicing and maintaining the model B. Grease fittings for the most part have been grouped and centralized to minimize lost motion in lubrication. Controls and switches are mounted on a unitized cockpit panel which can be quickly removed without disassembly. The engine is accessible from top and bottom as well as both sides, allowing faster servicing.

Operator visibility is excellent. A higher cockpit—with adjustable seat—provides not only a better view ahead

Continued on page 60

1. Fingertip electric controls

2. Point-of-action electric motors

3. Hinged body design . . . no frame, no springs

4. Big, multi-disc air brakes on all 4 wheels . . . selective brake control locks front or back wheels

5. Interchangeable tires and wheels, front and rear

6. All-steel body . . . with tri-level bottom

7. Wide bowl, with low rear entry, makes loading easier, faster . . . with less spillage

Cut your pit costs

with high-production Tournapull® Rear-Dump haulers

Capable of high-production in all materials, with a minimum of maintenance, LeTourneau-Westinghouse Tournapulls with Rear-Dumps give you more for your money in productive hours worked . . . more in tons moved . . . at lower cost. Here's why!

Simplified construction

Rear-Dump construction is radically simplified from that of conventional haulers. In place of a foundation frame and body sub-frame, Tournapull prime-mover and trail unit are hitched together by means of a rugged, high, horizontal yoke. Yoke pivots horizontally on kingpin at front . . . then extends back along the sides of the bowl, where it is pivoted vertically just above and ahead of rear wheels.

Heavy-duty bowl resists shock, abrasion, and crushing damage of big chunk-rock dropped by excavator.

Big tires

There are no dual tire or mixed size problems. Big, single, low-pressure tires adequately absorb the shocks of rough off-road travel and shovel loading. Troublesome springs, spring hangers and tie-rods that require frequent maintenance and replacement are eliminated. Long-wearing tires are interchangeable all around . . . one spare serves an entire fleet.

2-wheel prime-mover

Front-wheel drive and kingpin-type steer further simplify Tournapull construction. A multitude of trouble-causing parts are eliminated. No longer must power be carried back to the rear through a long driveshaft . . . with its inherent bearing, universal joint, and lubricating problems. No longer is steering handled by small front wheels subject to misalignment from "bulldozing", as they try to get out of ruts. All compact machinery inside prime-mover case is readily accessible for quick adjustment, easy servicing.

Simple, safe dump action

A touch of electric switch on dashboard instantly activates point-of-action body-hoist motor. Entire dump is under power control — there is no free fall. There's no delay for hydraulic pressure build-up, no shock-loads — as with gravity dumping. You save on maintenance time, too, because there is no hoist maintenance to check . . . only a few places to inspect and lubricate.

For complete information

Find out how these savings can put money in *your* pocket. There are three LeTourneau-Westinghouse Rear-Dump sizes to fit your requirements, with 11, 22 and 35-ton capacities. Write for information.

R-1409-M-1

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

PERFECT BALANCE
...puts the load where you want it!
Even in close quarters Hendrix Dragline Buckets fill faster . . . handle easier . . . dump cleaner for "lowest-cost-per-yard" performance.
A TYPE FOR EVERY DIGGING PURPOSE—¼ to 40 CUBIC YARDS
HENDRIX DRAGLINE BUCKETS
HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

▲ Tournatractor moves in between shovel-swings to clean up spillage and doze blasted stone for easier loading. Shovel cycle is not interrupted, because of rubber-tired tractor's sure-footed speed to 17 mph on uneven pit floor.

Tournatractor handles dozing quickly . . . gets good bladeful of rock, moves about 2½ cubic yards in 30-ft. dozing run. Versatile machine handles many other quarry assignments, pushes in blasted stone, cleans up around stockpiles, pulls other equipment around quarry. ▼

Rubber-tired tractor works fast on watery pit floor

A large Ohio quarry, producing 700,000 tons of limestone yearly, uses one rubber-tired Tournatractor to handle all clean-up and pit maintenance. The tractor covers 325 acres . . . maintaining and building haul roads, moving freight cars, pushing in toe of stockpiles, bunching blasted stone, cleaning around shovel.

6" of water, no barrier

A few days before these pictures were taken, heavy rains left as much as 6 inches of water on the quarry floor. Rolling easily on its big 21:00 x 25 low-pressure tires, the tractor maneuvered in and out of the watery loading area, handled its assignments quickly and efficiently.

A major Tournatractor advantage when working in rain and water is that all moving parts in its power train are completely enclosed. They operate in a constant bath of oil, sealed against moisture. Lubricants stay in to prevent corrosion and maintain machine's high-operating efficiency and low-maintenance cost.

"Beats crawler on rock"

Foreman Bernard Boli said, "Tournatractor has crawler beat all to pieces on rock . . . gets around 1¼-mile quarry easily. Our biggest reason for buying the Tournatractor was speed." And operator Charles A. Slover said, "Tournatractor is a wonderful machine for the operator. It doesn't beat you around like a crawler. Besides lubricating quickly, and being able to move six 45-ton-load cars, I like the ease of riding."

Perhaps you can use a 210 hp rubber-tired tractor

To handle widely scattered dozing, pushing, and clean-up assignments, let Tournatractor help you speed operations, save you money. Let us show you owner-verified performance records of Tournatractor on work similar to yours.

Versatile Tournatractor dozes overburden between cleanup and other assignments. Shovel in background removes 6' to 10' of overburden. Tournatractor quickly cleans stone shelf so that production shovels can move in. ▼

Tournatractor—Trademark Reg. U.S. Pat. Off. T-997-Q-bw

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

GET 59% MORE LIGHT OUTPUT...

From Model 120 500 Watt

STURDILITE
FLOOD LAMP

- Steps up night-time production —
- Adds to SAFETY! . . .
- Especially Adapted for Operations Such as Open Pit Mining, Stripping, Dredging, Excavating, Crushing and Mix Plants, Logging, Road Building, Drilling, Quarrying, Etc.

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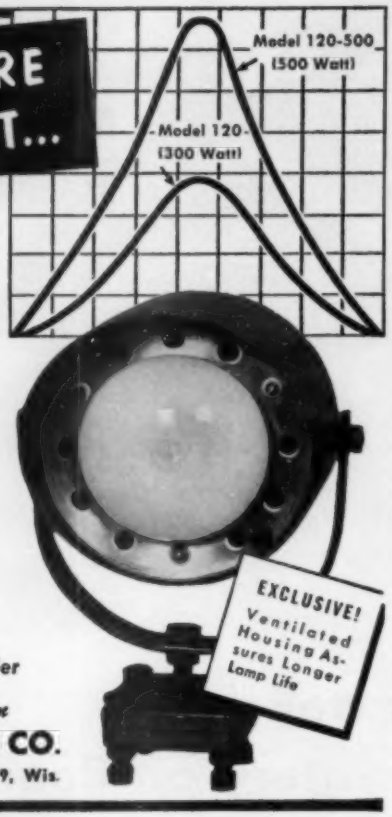
PHOENIX PRODUCTS CO.
4723 N. 27th St. • Milwaukee 9, Wis.



New Equipment . . .

Continued from page 56

of the machine, but combined with the lower yoke structure of the scraper gives broad unobstructed vision to the rear. The operator gets a good, clear look at his load and a full view of his pusher, permitting better teamwork and faster operation.

The 27-yd. scraper is designed similarly to the model C. A longer blade cuts a wider swath. The broader, longer bowl interior eliminates the necessity of forcing dirt up in a high, narrow column. Side sheets and floor of the bowl are clean and smooth, minimizing friction resistance. The floor of the scraper stays nearly flat in loading. With only 1° floor tilt when the blade is on the ground, material slides easily without having to travel "up-hill" to get into the bowl.

A specially curved deflector on the tailgate guides material to the center of the bowl and stimulates the rolling "boiling" action which fills both bowl and apron for extra heaping loads. A grille grid crown on the tailgate prevents over-the-back spillage onto push beams and rear assemblies.

On a spread, the apron swings high (more than 7 feet) permitting easy ejection as the positive action power tailgate forces the load out and wipes the bowl clean. Electric power and controls, which allow sharp precise cuts in loading, also serve to spread the material in accurate controlled lifts.

Like the "C" size, the new "B" Fullpak provides a quick drop mechanism on the bowl lift. This unit cuts seconds off handling tough-to-load, loose materials by enabling the operator to "pump" the loads in.

Speed in loading and spreading is matched by speed in hauling. Powered by a 293-hp, 6-cylinder Cummins diesel, teamed with a 10-speed transmission, the new "B" is capable of speeds up to 28.43 mph. Electric power is used for instant positive acting steering as well as for all the work functions of the machine. Air pressure activates the big four-wheel air brakes and the clutch assist. Manueverability through 90° steering permits the model B to make a complete turn in less than 40 feet.

The Fullpak scraper readily interchanges with other trailing units which can be attached behind the "B" primemover. Currently available are a 35-ton rear-dump and a 30-ton crane.

Motor Generator Welder

Manufacturer: General-Electric Co., Welding Dept., Schenectady 5, N.Y.

Claims: A new line of motor-generator welders, featuring pre-lubricated sealed bearings, controlled current peaks and space-saving design, has been announced by General Electric.

The welders are designated WD30AE and WD40AE. An improved magnetic starter with fast response, bi-metallic thermal overload relays prevents motor burnout in the event of motor overload. The relays will kick-out in less than 10 seconds in stalled single phase, and in less than eight seconds if the rotor is locked in normal three-phase position.

All bearings, which are rubber-mounted for quiet operation, are oversize for longer life. A unique air bypass in the intermediate bearing housing and a dust cap on the commutator and bearing prevent dust contamination.

The welders produce the same high recovery voltages and controlled current peaks with pop-out-free arcs as engine-driven units.

Built with push-button controls, the new units include generator, driving motor and accompanying controls, all encased in a weather-resistant, self-ventilated case.

Driving motors and motor starters on dual-voltage machines are designed to accommodate voltage reconnection without changing overload relay heaters and other accessories.

The generator employs the Bergman split-pole principle, and is self-excited from an independent third brush. This design, combined with the transformer reactor, produces a penetrating arc.

The new welder-generators can be used for virtually all industrial applications, including light, medium, and heavy d-c metal arc and inert arc welding. Because of compact, sturdy construction, they may be stacked one atop another, reducing floor space requirements considerably.

Heavy-duty Adams grader improves, maintains haul-roads . . . smooths plant area. Better roads pay off in faster, lower-cost hauls from mine or pit to plant.

Big ALL-JOB grader

extra power for heavy-duty grade work

Here's a BIG grader with work-capacity to match . . . a machine that handles all grade work at lowest cost. It's the 150 hp Adams 660 . . . a 30,200 lb. machine geared to fast, modern work methods.

15 speeds boost output

Adams 660 really makes the dirt "fly", with more power-speed combinations than any other conventional transmission grader. For your *normal work-range*, "660" gives you 4 full-power forward speeds (2.3 to 6.7 mph) instead of 3. It provides 2 reverse-work speeds as against the usual 1. You get "just-right" power and speed for all every-day blading operations.

Three optional *creeper speeds*, as slow as 36 feet per minute, provide extra "muscle" for rugged work . . . controlled power for precise blading and work in rocky soil.

Add to this *high travel speeds* (forward and reverse) that cut-down wasted time . . . add *productive* minutes for *haul-road maintenance*. 4 forward gears (10.3 to 26.0 mph) speed maneuvering, make hill climbing easier, cut travel time. And "660's" 2 faster reverse speeds (to 13.7 mph) save many turn-arounds . . . give up to 30% bonus production on one-way work.

Positive controls speed blading

Your operator works faster, more precisely with smooth Adams blade controls. Three-jaw clutches engage without chatter or kick-back. Direct-drive power is applied steadily. Your operator can *depend* on blade operation at constant speed — no matter how many other controls are actuated. There's no vibration because all clutches, gears, shafts, and universal-joints move on anti-friction bearings.

Attachments widen work-range

There are a number of *specialized* attachments you may want to add to the "660" . . . now or later: *Scarifier* for opening-up clay, rock-filled soil, or old roadways . . . *push-plate* for push-loading scrapers, or starting stubborn equipment . . . *bulldozer blade* for odd-lot casting and back-filling . . . *Elegrader* for stripping topsoil, loading dirt, casting ditch-material, building up roads . . . *snow equipment* for winter snow removal work.

Also, 190 hp "660" with torque converter

For maximum push-power at all speeds between 0.0 and 27.4 mph, LeTourneau-Westinghouse offers the new POWER-*Flow* 660. This super heavy-duty grader applies 190 hp thru torque converter to give you the effective work-power of an *infinite* number of power-speed combinations. POWER-*Flow* 660 plows thru varying loads at constant speed . . . will not stall . . . starts extra-heavy loads without lugging. Torque converter cushions engine and drive against shock . . . makes operation simpler, more efficient.

Ask for a demonstration

Call or write, and ask us to show you how Adams graders — all 6 sizes, 60 to 190 hp — work faster, cut deeper, blade truer, put-out more finished work than any other grader of similar size and power. In the 190, 150, 123, 104 and 80 hp sizes, you have a choice of GM or Cummins diesel engines.

This fast-moving Adams grader keeps pit floor clean . . . saves wear on fleets' tires and treads. Permits driving haul equipment by shortest routes, and improves drainage.

Adams, POWER-Flow—Trademark AG-1223-M-b-4

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

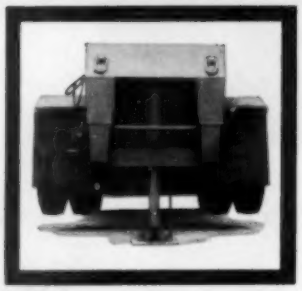
It's terrific but the easy reshoeing feature especially appeals to me!

THPG

HYDRAU-LIFT

The New Remarkable

ROGERS DETACHABLE GOOSENECK



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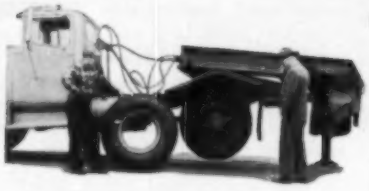


Hydraulically operated. Driven from power take-off or electrically from truck battery.

•

Winchless operation saves up to 1000 lbs. and hundreds of dollars in cost.

•

Operated by one man who sees and controls all operations from a single position on the gooseneck.

•

Features permit new, fast, easy changing of trailer and truck tires.

•

No pins, no wedges, no fifth wheel RAMP.

•

Overhanging loads can be unloaded with new speed and ease. Simply raise the deck—put blocking under the load—lower the deck—detach the gooseneck and pull the trailer out.

Here is the lighter, lower priced, faster detachable gooseneck that combines every wanted feature *plus* exclusive Rogers advantages.

The simplified new principle lowers the weight, reduces the cost and attains operating advantages heretofore unknown.

Its manifold advantages, some of which are mentioned briefly here, make it a most desirable unit for *every* hauler.

Write or phone for illustrated literature giving complete information.

EXPERIENCE builds 'em

PERFORMANCE sells 'em

ROGERS BROS. CORP.

ALBION, PENNA.

EXPORT OFFICE, 50 CHURCH ST., NEW YORK 7, N. Y., U.S.A.

Cable Address: BROSITES

Check and you'll choose a ROGERS

Shovel . . .

Continued from page 33

al months. More than 70 freight cars were required to ship the shovel from the manufacturer's South Milwaukee plant to the erection site. The shovel made its trial run a few weeks prior to the open house.

Working at the rate of one digging-dumping cycle in a little less than a minute, the mechanical giant in 24 hours could pile up more than 100,000 tons of overburden. The *River Queen* will excavate only down to the coal seam; actual coal loading will be done by smaller power shovels. They will load into large diesel haulers, which will take the coal to a washing and screening plant now under construction. The plant will be geared to wash 1,000 tph.

Despite its huge size, one operator controls the entire digging operation of the machine with two hand levers and two foot pedals. The operator's glass-enclosed cab, perched 30 feet above the ground at the right front corner of the machine, was constructed to provide maximum visibility. An 8-ft. wiper keeps the windshield clean on rainy days.

Well-Equipped Cab

The cab has an air conditioning system and an inter-communication hookup with four telephone sets. A loudspeaker attachment on the boom enables the operator to keep in contact with his ground men and those in the pit area. For comfort and utility the cab is furnished with tile flooring, wood paneling, a water cooler, clothes lockers and a foreman's desk.

Special high-strength alloy steels are used in the shovel. The dipper is made of T-1 steel; the dipper handle and boom are of Tri-Ten steel. Both steels are made by the United States Steel Corp.

Fifteen General Electric motors power the shovel—eleven for digging and four for propelling. The main motors are two 1,500-hp AC motor-generator-set, synchronous-driving units. The main functional DC motors consist of four hoist motors rated at 375-hp each; three swing motors at 187½-hp each; two crowd motors at 187½-hp each; and four 200-hp propel motors.

The propel motors drive four crawler-type trucks, each weighing 217.7 tons. Each crawler unit is 13 feet 5 inches wide, 26 feet 9 inches long and 10 feet 9 inches high. A ground man directs the machine's moves from an electrical control box mounted at the base of the machine.

Rubber-tired haul units reduce maintenance costs at South African pits

●

Find out how you, too, can Cut Costs... Increase Profits

Two self-powered D Tournapull-Scrapers handle all special sand mined from two valuable pits owned by Industrial Sand & Engineering Co., Ltd., Pretoria, Union of South Africa. These two pits, 15 miles west of Pretoria, in Moot Valley, produce 75% of all the sand used in South Africa's glass and foundry industries.

Haul 14,060 metric tons a month

Working 45 hours per week, the two Tournapulls move about 15,500 tons of glass sand (silica), foundry sand, and overburden every month.

In typical operation, "D's" self-load an average of 6 cubic yards of moist foundry sand in ½ minute. Hauls of about .2 mile, to the grizzlies located at each pit, take 1½ minutes. Each of the D Tournapulls completes a typical cycle of more than .8 mile in 4.4 minutes.

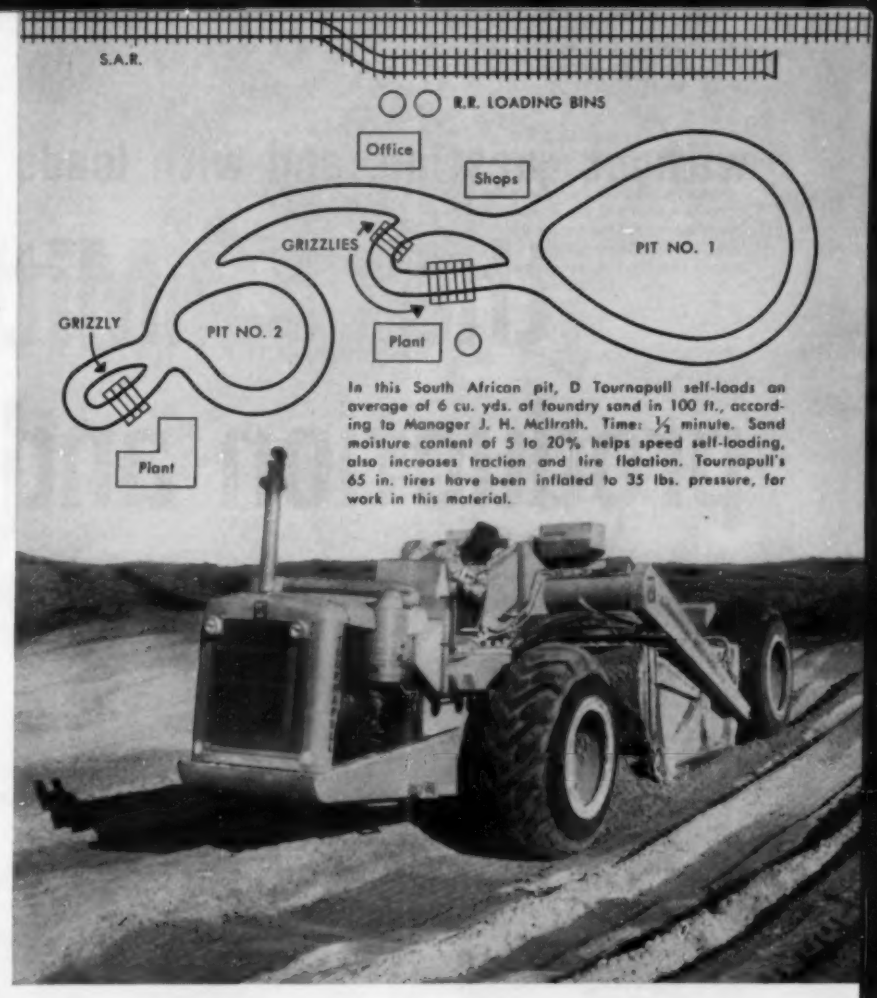
Handle maintenance, construction

This high production rate is partly due to the good condition of the sand haul roads, maintained and compacted by the versatile Tournapull Scrapers themselves.

Due to their fast, efficient sand-moving, Tournapulls have plenty of time for such road maintenance, in addition to their regular mine hauling duties. In their spare time, Tournapulls are also assigned to build dams where necessary, and to act as utility hauling tools.

Company formerly used 57 hp crawler-tractors and scrapers to haul the abrasive sand at these two pits. Maintenance and repair costs, however, ran excessively high on track-type haul units. Pins and bushings had to be replaced after every 400 hours of use.

In sharp contrast, Tournapull tires are giving more than 3,000 hours of use, working in material that representatives for the crawler manufacturer called the "most abrasive" they ever encountered.



In this South African pit, D Tournapull self-loads an average of 6 cu. yds. of foundry sand in 100 ft., according to Manager J. H. McIlrath. Time: ½ minute. Sand moisture content of 5 to 20% helps speed self-loading, also increases traction and tire flotation. Tournapull's 65 in. tires have been inflated to 35 lbs. pressure, for work in this material.

Tournapull dumps load of special moist sand into grizzly in an average of 18 seconds. Industrial Sand & Engineering Company mines only top grade glass and foundry sand at the company's two pits in Moot Valley.

"It was a lucky day when we purchased the Tournapulls," says Manager J. H. McIlrath. "We were getting only 400 hours of track life."

Liked one, bought another

For an entire year, a single Tournapull mined all sand handled here, and hauled it to the washing plant. When company officials decided to add a second haul unit, they showed their satisfaction with Tournapull performance by purchasing a second "D".

The same high-speed mobility, and low maintenance that contribute to Tournapull efficiency in this successful mining work could benefit *your* projects, too. Before you buy another set of tracks, investigate the many advantages that rubber-tired Tournapulls can give you. Write us for more information.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-1187-S-bw

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

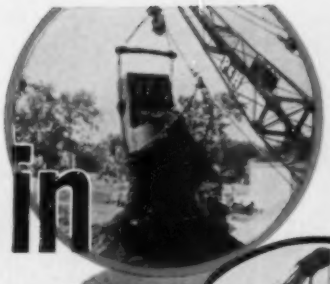
without question, and with loads of proof *

the P&H Miti-Mite is production and earning

WHEN YOU BUY a truck crane it will pay you to compare any make with the P&H Miti-Mite. This comparison will prove to you what thousands of contractors experience every day—the Miti-Mite out-performs any other small truck crane no matter what the attachment.

Compare these facts and figures: the Miti-Mite delivers its full rated capacity *around the full 360°* for complete flexibility . . . the Miti-Mite is rated at 8-ton crane capacity at 12′ radius . . . has an 11 cubic foot shovel capacity and a maximum trench hoe width. And for crane use the Miti-Mite can handle a 50 foot boom with a 15 foot jib. These are the features you want in a truck crane for real capacity and high earning power—you'll find them only in the P&H Miti-Mite.

unbeatable in power



DRAGLINE
Full-size heavy-duty bucket is used by the Miti-Mite dragline attachment. For longer reaches, inserts in 5 and 10 foot lengths are available. Lattice-type boom provides strength without excess weight for faster cycles and greater payloads.

CRANE
Exceptional stability means faster operation with greater safety. Planetary boom hoist is standard. Boom point of the gooseneck is open-throated for maximum boom load clearance. 8-ton capacity at 12' radius.

MAGNET
Handles 39-inch magnet with 5 kw. generator. Planetary boom hoist provides quick adjustment to any working angle.

CLAMSHELL
No need for lightweight buckets with a Miti-Mite—this versatile machine swings a standard construction bucket.

TRENCH HOE
Gooseneck boom permits greater digging depths and dumping heights. Performs in rock, hard pan, heavy shales, works in laterals, septic tank areas.

SHOVEL
16½-foot shovel boom is all-welded with box section design for maximum strength without weight. Electrically tripped dipper has 11 cu. ft. capacity. Positive chain crowd and retract mechanism.

HERE'S PROOF OF MITI-MITE'S EARNING POWER!

Harnischfeger Corporation, Dept. I-K
Construction & Mining Division
Milwaukee 46, Wisconsin

Gentlemen:
Please send illustrated, certified, on-the-job performance reports proving Miti-Mite's extra capacity and earning power.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

HARNISCHFEGER

P&H Construction & Mining Division
Milwaukee 46, Wisconsin

(Left) Reinforcing steel is loaded to a truck for use on the Gust Newberg job. (Right) Active bulldozers are leveling.

Alcoa . . .

Continued from page 31

ties, including the potroom buildings, carbon plant and all utility and service buildings. The piles, 12 to 15 inches in diameter, will be filled with concrete in place. They will be driven from 15 to 95 feet to refusal.

Another Evansville contractor, Ryan Construction Co., has the contract for the construction of all building and equipment foundations, floor slabs and concrete roads and area paving for the smelting plant. Buildings covered by this contract have in excess of 1 million square feet of floor area. Among the 30 major buildings for which Ryan will provide foundations are 10 potroom buildings, a rectifier building, a carbon rodding building and potlining and grinding buildings. Each of the potroom buildings will be 1,100 feet long.

Equipment foundations will be provided for rectifier transformers, the cooling tower, elevated water tank and approximately 100 transmission towers.

Most of Ryan's foundation work is to be completed by next fall.

Dravo Contract

Docking facilities are being constructed by the Dravo Corp., Pittsburgh, Pa. Six steel shells positioned parallel to the river about 110 feet from the shore line at pool stage comprise the harbor. Three steel shells, each 56 feet in diameter, were placed seven feet apart to form the foundation for a rock-earthen causeway extending from the piling to the shore. A 16-ft. shell and a 20-ft. shell will be placed at intervals west (downstream) of the causeway piling. A sixth shell, 20 feet in diameter, is located 87 feet east of the causeway piling.

The upper level of the causeway will be about 70 feet wide and eventually will support a belt conveyor, a rail spur and a truck roadway. The piling and causeway will be 47 feet above the river pool stage.

All concrete for project contractors is being provided by the Colonial Sand & Stone Co., Inc., New York City, under a contract with Alcoa. Colonial's batch plant on the plant site has a capacity of 1,000 cubic yards of concrete per eight-hour day. The smelter and power plant will require approximately 130,000 yards. A fleet of 7-yd. mixer trucks transports the concrete from the batch plant to the job sites.

Russell D. Pulver is construction superintendent for Alcoa's Warrick Works.

It's a Bucyrus-Erie Rock Grab for Speed – Safety – Strength

SPEEDY PICKUP — Bucyrus-Erie rock grabs pick up assorted sizes and shapes quickly — without need for drilling dog holes or jacking up rock to place slings.

SOLID GRABS — Rocks are held firmly by the jaws through action of the multiple-part rope hitch — the heavier the lift, the more secure the grip.

STRENGTH IN RESERVE — All Bucyrus-Erie rock grabs are conservatively rated — available in five sizes — 2½ to 20 tons capacity.

Investigate the speed and safety advantages of these dependable rock grabs. See your Bucyrus-Erie distributor. 29B37C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

HEAVY CONSTRUCTION · SHORE PROTECTION · BREAKWATERS

EXPLOSIVES

RESEARCH

PAYS OFF

There's no substitute for the right combination of explosives materials and the "know-how" for getting results that save both time and money. Hercules has specialized in the pioneering of improved explosives techniques for more than 40 years. We will be glad to assist you in selecting the right materials and blasting methods to meet your particular requirements.

HERCULES POWDER COMPANY
INCORPORATED

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XR56-5

NOT in the Contract

The director was talking in his sleep. "Darling, I love you," he said. "You are my life, my heart. More than anything else in the world. . . . "

Then he woke up and saw his wife glaring at him. Knowing what the trouble might be he pretended he was still asleep, rolled over and murmured, "Cut! Now bring on the horses."

Salesman: "Sir, I have something here that's guaranteed to make you the life of the party, allow you to win friends and influence people, help you forge ahead in the business world and, in general, make life a more pleasant place and an invigorating experience."

Contractor: "I'll take a fifth."

Mother and Junior were surveying the family album. Presently they came to a picture of a handsome wavy-haired young man.

"Who's that?" asked Junior.

"Why, that's your father."

"Yeah?" said Junior skeptically. "Then who's the old bald-headed guy who's been living with us all this time?"

As a drunk staggered his way homeward from a late party, he pondered the ways of concealing his condition from his wife.

"I'll go home and read," he decided. "Whoever heard of a drunken man reading a book?"

Later his wife heard a noise in the den. "What in the world are you doing there?" she asked.

"Reading, my dear," he replied cheerfully.

"You idiot," she shrilled, as she looked in through the open door, "shut up that valise and come to bed!"

Sailor (contemplating ship in dock): "That's a queer sort of name for a ship—*'Dammit.'*"

Mate: "Yeah, the old girl who launched 'er banged 'er thumb at the ceremony."

Lawyer: "What's to be different about your will?"

Henpecked husband: "I'm leaving everything to my wife providing she marries again within the year. I want somebody to be sorry I died!"

Catskinner: "Why don't you come out and enjoy yourself with the girls?"

Friend: "Aw, they're too biased."

Catskinner: "What do you mean by that?"

Friend: "Well, it's bias this and bias that, and before I know where I am, I'm broke."

The gentleman sat down at the bar and ordered a martini. "Very dry," he insisted: "Twenty parts gin to one part vermouth."

"All right, sir," said the bartender. "Shall I twist a bit of lemon peel over it?"

"My good man, when I want lemonade, I'll ask for it!"

Then there's the cute little nurse who deducts 10 beats from the patient's pulse to allow for her looks and personality.

He was the only witness to the car accident. The cop asked his name.

Witness: "John Smith."

Cop: "Give us your real name."

Witness: "Well, put me down as William Shakespeare."

Cop: "That's better. You can't fool me with that Smith stuff."

Speaking on the dangers of modern food, the speaker pointed a finger at a harassed looking listener and demanded, "What is it that we all eat, at some time or another, that is the worst thing imaginable for us? Do you know, sir?"

The little man answered softly, "Wedding cake."

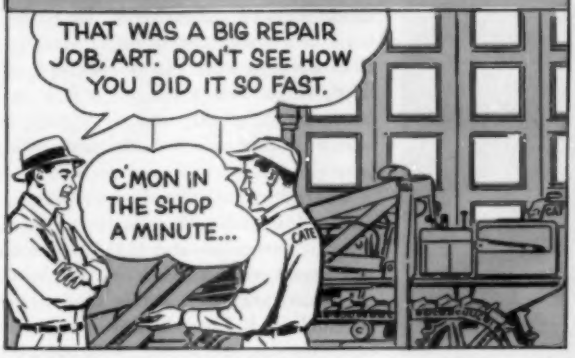
A young married couple bought a parakeet, but all he could say was "let's neck." The preacher, who heard about it, suggested that they put his bird, who always said, "let's pray," in the cage with the delinquent bird, and maybe it could teach the other to say "let's pray."

Upon putting the birds together, the couple's bird said, "let's neck!" The preacher's bird replied, "My prayers have been answered!"

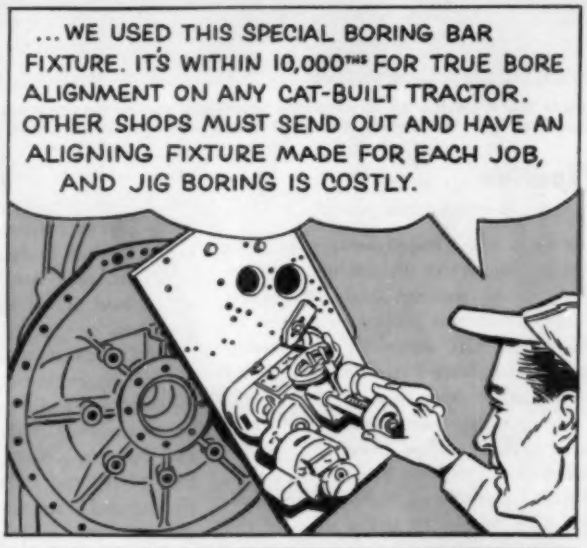
"Still can't figger, Maw, how we get on that gov'ment road building program!"

THE CASE OF THE

TOOL THAT BUILDS EXTRA WORKING HOURS



WE'RE SET UP WITH DIFFERENT WORK AREAS, AND WITH SPECIAL TOOLS AND EQUIPMENT FOR DIFFERENT JOBS.
IT'S A NEAT LAYOUT, ALL RIGHT!


...WE USED THIS SPECIAL BORING BAR FIXTURE. IT'S WITHIN 10,000THS FOR TRUE BORE ALIGNMENT ON ANY CAT-BUILT TRACTOR. OTHER SHOPS MUST SEND OUT AND HAVE AN ALIGNING FIXTURE MADE FOR EACH JOB, AND JIG BORING IS COSTLY.

CATERPILLAR*
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.
CAT CARE FOR LONGER WEAR
LET ME HELP KEEP YOUR CAT* EQUIPMENT ON THE JOB!
Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

Loads were hauled on dependable schedules to the Engineers Ltd. job by Airway Trucking Co. With their Peterbilt truck are (left) Bill Huff and Babe Powers.

Pipeline . . .

Continued from page 27

any rocks which might damage the pipeline coating. After the pipeline was covered in this manner, high production backfill then was pushed in by one of the bigger Cat dozers. Final cleanup and dressing were a combined dozer and motor grader operation.

Mountain pipeline construction usually is thought of as belonging to the rough country of the Rocky Mountains, British Columbia or some similar place. But here, within 60 airline miles of the Los Angeles city hall, a mountain pipeline job as rough as they come had its problems met and solved. Southern California Gas Co. had met the demand for its product well ahead of schedule—and so quietly that users in the Loma Linda area will take the new facility as a matter of course. But the pipeline men who worked this job will remember it for a long time to come, because of the challenges it offered.

Field operations were under the general supervision of Engineers Limited's Floyd Smith. Ronnie Cook was area superintendent.

Salem . . .

Continued from page 37

construction equipment needed for each operation ties-in nicely with needs in the other companies. For example, the same heavy-duty low-bed trailer, which hauls a medium-size shovel to a new job, can be used to excellent advantage by Salem Heavy Hauling Co. in transporting a 40-ton bridge girder to a construction site. And the same trucks which haul gravel have numerous other uses, too.

SS&G's construction machinery roster is built around equipment especially designed to handle both easy and tough excavations at high speed. There are two Bucyrus-Erie 22-B's, five Bucyrus-Erie 15-B's and two 10-B's. For heavy rigging and crane service, the firm owns three 25-ton mobile crane units, including a Bucyrus-Erie 22-B Transit Crane, a Lorain MotoCrane, and a truck-mounted American.

Other construction equipment includes seven Caterpillar tractors of various sizes up to D8, two Caterpillar scrapers, three Fordson ditchers, two Ottawa backhoes mounted on rubber-tire tractors, and a fleet of from 20 to 25 dump trucks. There are also five compressors of various sizes, along with hand-held pneumatic drills for excavation work in rock. It is the type of fleet which can move in or out of headquarters quickly and serve the big statewide area in which the firm takes jobs.

Control of the firm's operations is centered in Salem headquarters. Here, jobs are estimated and bid, equipment is assigned where needed, and mechanical repairs are made. Direct supervision is conducted from headquarters, and machinery is overhauled. Basic idea of the setup is to establish a permanent business in which costs, as well as profits, are known. Another advantage of the headquarters-type setup is that it gives customers better service by maintaining a nerve center where problems, both great and small, can be cleared at all times.

An example of how this setup works was provided not long ago when Aluminum Co. of Canada, a subsidiary of Aluminium, Ltd., wanted to drill a large area south of Salem to sample the extent and quality of a large bauxite deposit. SS&G officials quickly were on the telephone assuring Aluminum Co. officials that the firm had the necessary know-how and equipment to do such a job. A McCullough chain saw engine was rigged up with special quick-opening chucks to take the drilling tools. Holes were sunk to a depth up to 40 feet beneath the surface of the ground. Before all the sampling was completed

Besides handling SS&G crawler excavators and tractors, the subsidiary Salem Heavy Hauling Co. moves bulky materials like this 40-ton steel plate girder for a bridge.

it amounted to quite a job, but none the less it was pushed through with typical speed and efficiency.

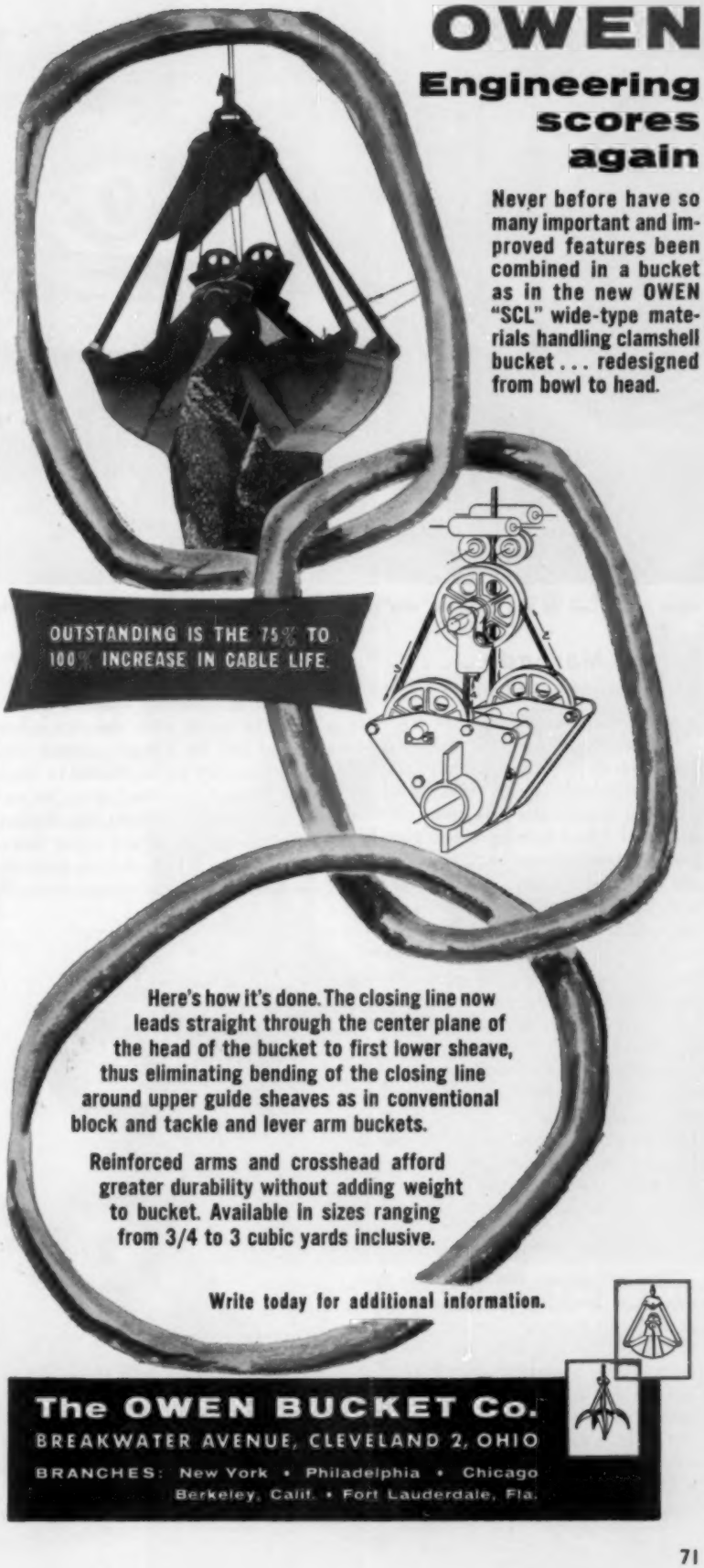
Equipment upkeep, like other parts of management, is geared into the Salem integrated-headquarters setup. Routine operating repairs and preventive maintenance are taken care of in the field by trained mechanics and the equipment operators, but all major work is done in the Salem shops. When a job is finished, equipment moves back into this shop on truck-drawn low-bed trailers, where mechanics can work either in winter or summer in comfort. It is a company policy—and the appearance of all machines bears this out—to keep equipment in as new an operating condition as possible. Good lubrication on the swing-circle gears of an older 15-B, for example, let that particular part last nine years in service.

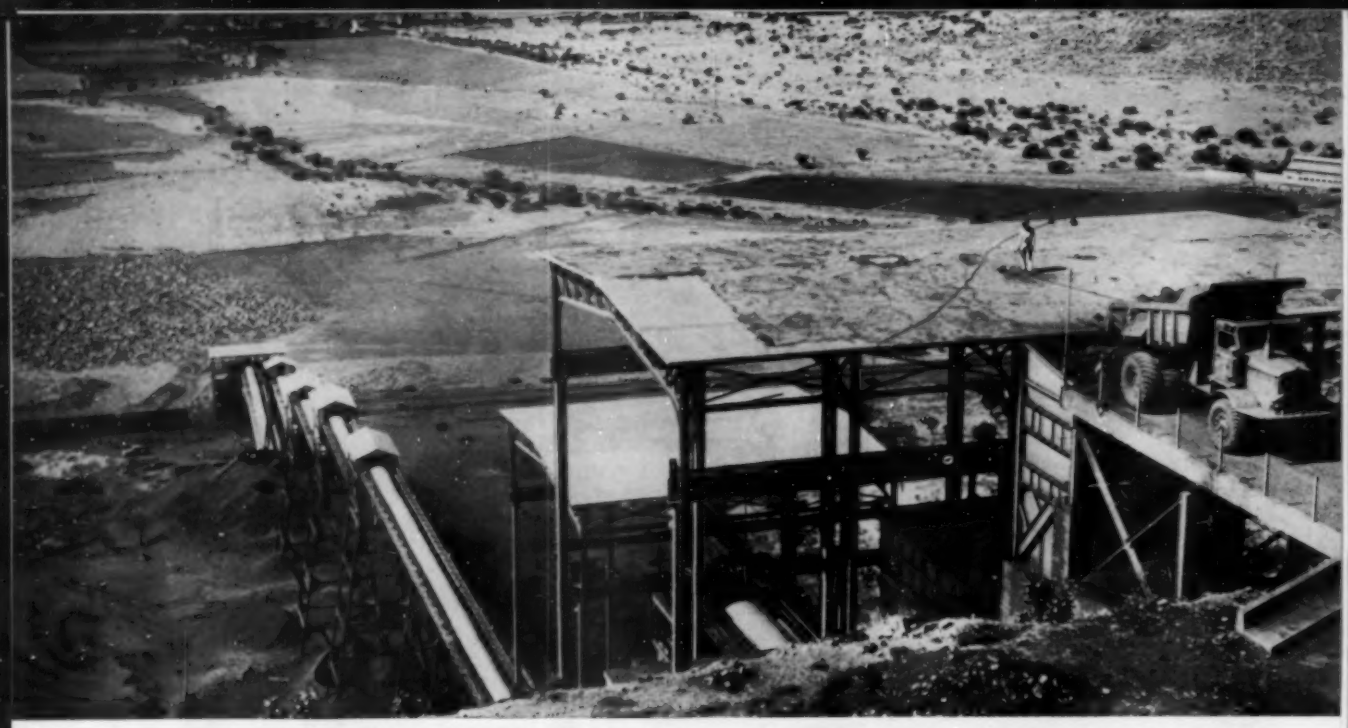
Industrial Boom

Slowly but steadily SS&G's work is expanding. Salem and other Oregon cities not unlike other urban centers of the United States, are attracting considerable heavy industry, all of which is grist for the company work mill. Equipped with a shovel front-end and ¾-yd. dipper, the Bucyrus-Erie 22-B machines on the company's lineup have proved especially suitable for basement excavation on large industrial buildings. The same machine, equipped with a dragshovel or dragline bucket, has been valuable in doing smaller basements. Construction of industrial buildings by the tiltup concrete slab method has given cranes on SS&G's roster extensive work during the last few years. When this article was written, one such job was in progress in downtown Salem where a new paint store and office building was to be located. The ability of the Transit Crane to maneuver in alleys and other close quarters, and to make lifts up to 25 tons, is made to order for such building construction work, according to Tom Hill.

Since the company's policy is to start work promptly, to push it as expediently and efficiently as possible, and to complete the work on time or ahead of time, owners all over the state now have learned to send bid invitations to SS&G.

By its policy of sound expansion, good work, and specializing on a line of construction which ties-in well with other activities of the company, Salem Sand & Gravel Co. has worked itself into the position of being one of Oregon's best-known excavating companies.


OWEN
Engineering scores again
Never before have so many important and improved features been combined in a bucket as in the new OWEN "SCL" wide-type materials handling clamshell bucket . . . redesigned from bowl to head.
OUTSTANDING IS THE 75% TO 100% INCREASE IN CABLE LIFE.
Here's how it's done. The closing line now leads straight through the center plane of the head of the bucket to first lower sheave, thus eliminating bending of the closing line around upper guide sheaves as in conventional block and tackle and lever arm buckets.
Reinforced arms and crosshead afford greater durability without adding weight to bucket. Available in sizes ranging from 3/4 to 3 cubic yards inclusive.
Write today for additional information.
The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.



Here is a view of the crushing and screening plant, looking from the grizzly hopper. A 400-ft. tunnel is under stockpiles.

Cerro Mercado . . .

Continued from page 39

is an Allis-Chalmers Hydrocone crusher.

Ore is reduced to sizes ranging from 4 to 6-in. down to fine mesh. Carrying 30-in. Goodrich rubber belts, the Joy conveyor system uses Falk speed reducers. Four Allis-Chalmers screens classify the material. The oversize tumbles through a chute into stockpiles far below. The screened material passes on to the next chute for classification.

A 400-ft. long and 9-ft. wide tunnel lies underneath the stockpiles. Inside the tunnel is a belt which, as it leaves the last stockpile, ascends 45 feet into the loading plant.

Push button-controlled openings beneath the stockpiles feed into a loading shelf inside the tunnel. A Link-Belt rotary plow, also push button-controlled, lifts ore from the loading shelf to carrying belts. Link-Belt also supplied the two apron feeders.

Pushbutton System

The outstanding feature of this system is its flexibility. Any size ore can be loaded by pushing a button. The man at the controls in a cabin below the primary crusher follows telephonic instructions as to the amount and sizes of ore needed.

The system moves 675 tons of material in an hour. Four minutes after being dumped at the grizzly by the Euclids, ore can be loaded into gondolas which run beneath the loading bins. The gondolas are manipulated by a Joy car puller. A Plymouth locomotive with a Cat 326 motor pulls the cars a few thousand feet to a main railroad line, from where they are dispatched to Monterrey, Monclova, or the United States.

A short distance from the loading station are the offices and repair shops. To combat the highly-abrasive iron ore, Esco shovel dippers are manganese-lined. Manganese also is used in the grizzly and on strategic parts of the apron feeders. During my visit, several men were working all night to put manganese arms into the rotary plow feeder.

Before completing the design for its handling system, Maldonado visited mines in the United States, South America and Europe. He was determined to evolve an effective system which would lower handling costs. Now he is plan-

General Manager Carlos F. Maldonado (left) designed Cerro de Mercado's handling system after visiting mines all over the world. Mine Supt. Issac Rubio is at right.

Iron Mountain shows in the background in this view of a nearby operation. A Cat D4 loader comes up with a heaping load.

ning to build a sintering plant at a cost of about $1 million. Mexico reportedly has only two sintering plants.

On the east side of the Iron Mountain, a small company, Minera del Norte, S.A., is excavating ore from a small section with a Caterpillar Traxcavator. Another company is working a mile away on the other side of the Durango-Torreon highway. Its properties extend along a strip which covers about 120 acres.

Iron Mountain is Durango's big tourist attraction. Just as in the days of Captain Mercado, a cross is always kept atop the 500-ft. peak.

Here's the crushing end of the mine's efficient crushing and screening plant.

(Above) A Joy car puller is used at loading station. (Below) A Cat Traxcavator loads a dump truck.

"65" PAYHAULER® hauls

4-ton rocks and ⅔-mile haul involved in Oregon road straightening job!

The wet, sticky clay in these pictures will give you an idea of the working conditions encountered by the "65" Payhauler operated by the Funderburk Construction Co., Sutherlin, Ore., on their 2-mile road job near Elkton. This clay cut machine efficiency on the job as much as an estimated 50%. Truck bodies had to be scraped clean periodically. And a bogged-down 1½-yd shovel had to be replaced by a sure-treading 3-yd International Drott TD-18 Skid-Shovel®.

In spite of these rough working conditions...and in spite of big 4-ton blocks of rock found in the clay...the International "65" Payhauler still maintained an average of 96 yds per hour on the ⅔-mile haul to the fill.

Veteran earthmover and Payhauler operator, Aaron Johnson, stated, "Here is the poorest loading material I've ever seen. Still I'm getting six 16-yard loads each hour over a cycle distance of 1⅓ miles."

Don't let unexpected weather and resultant job-bogging clay, mud, or water hold up your off-highway hauling jobs. Consider these all-weather, all-condition Payhauler advantages: proper weight distribution with 71% of total load on "95" drive wheels...74% of total load on "65" drive wheels; ample power from turbo-charged diesel engines with built-in fuel savings up to 10%; maximum power-transfer efficiency of International's long-lasting cerametallic-faced clutch; and load-matched gear ratios for smoother, faster selection of the right gear for every grade...every road condition.

Rock, bigger than 3-yd Skid-Shovel bucket, found in wet clay cut operating efficiency. Payhauler body, fabricated from abrasion-resistant high-tensile steel, together with strongest frame in its class, stands up to tough punishment of rock loading.

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

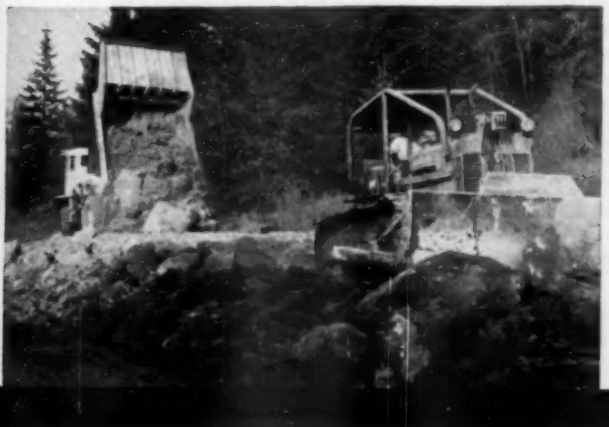
96 yds per hour

of job-bogging sticky clay!

Double-acting hoist cylinder in all stages with 106,300 pounds of force in first stage raises body in seconds. Hydraulic snubbing action prevents undue stress on hoist cylinders and "gentles" body return to frame.

International Drott TD-18 Skid-Shovel replaced 1½-yd shovel to load clay, big boulders into "65" Payhauler. "65" gives you big, bonus-producing 18-ton capacity, Model "95," 24 tons.

International trio...TD-18 Skid-Shovel, TD-24 tractor and Model "65" Payhauler promote production for Funderburk Construction Co., in spite of wet, sticky clay and big, stubborn rock.



In a Hayward, there's no contact between the closing mechanism and the gravel or other materials handled. To be sure—this "no contact" feature is only one advantage. But a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

The Hayward Company, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

New Trade Literature

Subject: **Detroit Diesel Units**

Content: A 19-page catalog outlines Detroit Diesel's complete line of power units for all types of industrial applications. Specifications are given on 31 engine models ranging from 44 to 761 bhp, including the new six-cylinder Turbopower engine. Another brochure describes General Motors' new and improved Hydrostarter, which provides instant starts for diesel engines.

Where to get: Detroit Diesel distributors and dealers or from Detroit Diesel Engine Div., General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich.

Subject: **A-C Tractors, Grader**

Content: Two new pieces of literature on tractor equipment are available from Allis-Chalmers. A 16-page catalog describes the model 45 motor grader. Photographs and sketches visualize details of mechanical features and components of the grader. The catalog also tells about attachments and accessories that add to the versatility of the unit, and includes specifications. Ask for MS-1148. The other item is an 8-page catalog about HD-16G and HD-21G tractor shovels. Engineering, design and construction features are explained and specifications given. Ask for MS-1102.

Where to get: Allis-Chalmers Mfg. Co., Construction Machinery Div., Milwaukee 1, Wis.

Subject: **Cummins PT Fuel System**

Content: A 12-page booklet explains the Cummins PT (Pressure-Time) fuel system. The booklet contains cutaway views of the four PT fuel pump assemblies and the PT injector. A section also is devoted to optional governor arrangements. The PT fuel system is adaptable to all Cummins diesels built since 1932.

Where to get: Cummins Engine Co., Inc., Columbus, Ind., or from Cummins distributors or dealers.

Subject: **Weather Forecast Service**

Content: The role of modern weather sciences in solving industrial problems is told in an illustrated 20-page booklet, *Weather Engineering for Profit.* The booklet is documented by actual case histories of weather services to many industries. Of particular interest to the construction field is the discussion of weather probabilities which can be used to narrow risks in bidding as well as examples of the use of forecasting services to cut labor costs and reduce material losses in actual building.

Where to get: Weather Corp. of America, 611 Olive St., St. Louis 1, Mo.

Subject: **Caterpillar Equipment**

Content: Caterpillar has released three new booklets. *For Extra Hard Work* describes the savings and benefits of sleeve-type track roller bearings to track-type tractor owners. The booklet explains through do-it-yourself examples and illustrations how and why sleeve-type roller bearings are able to withstand greater loads and shocks without damage. Ask for form DE707. *Selecting Power for Pumping* contains a check list of features necessary for continued dependable operation on pumping jobs. Step-by-step, the check list describes the proper requirements which an engine must have, backing them with illustrations and examples of efficient installations. Ask for form DE716. *Caterpillar Motor Graders* illustrates the versatility of these units through on-the-job photographs of machines doing bank sloping, road construction, ditching and other operations. A check list of features and an outline of attachments available is included. Among these attachments is a blade leveling device to assist operators in maintaining any desired slope regardless of unevenness of the ground. Ask for form D704.

Where to get: Caterpillar dealers or Advertising Div., Caterpillar Tractor Co., Peoria, Ill.

Subject: **Fuels and Lubricants**

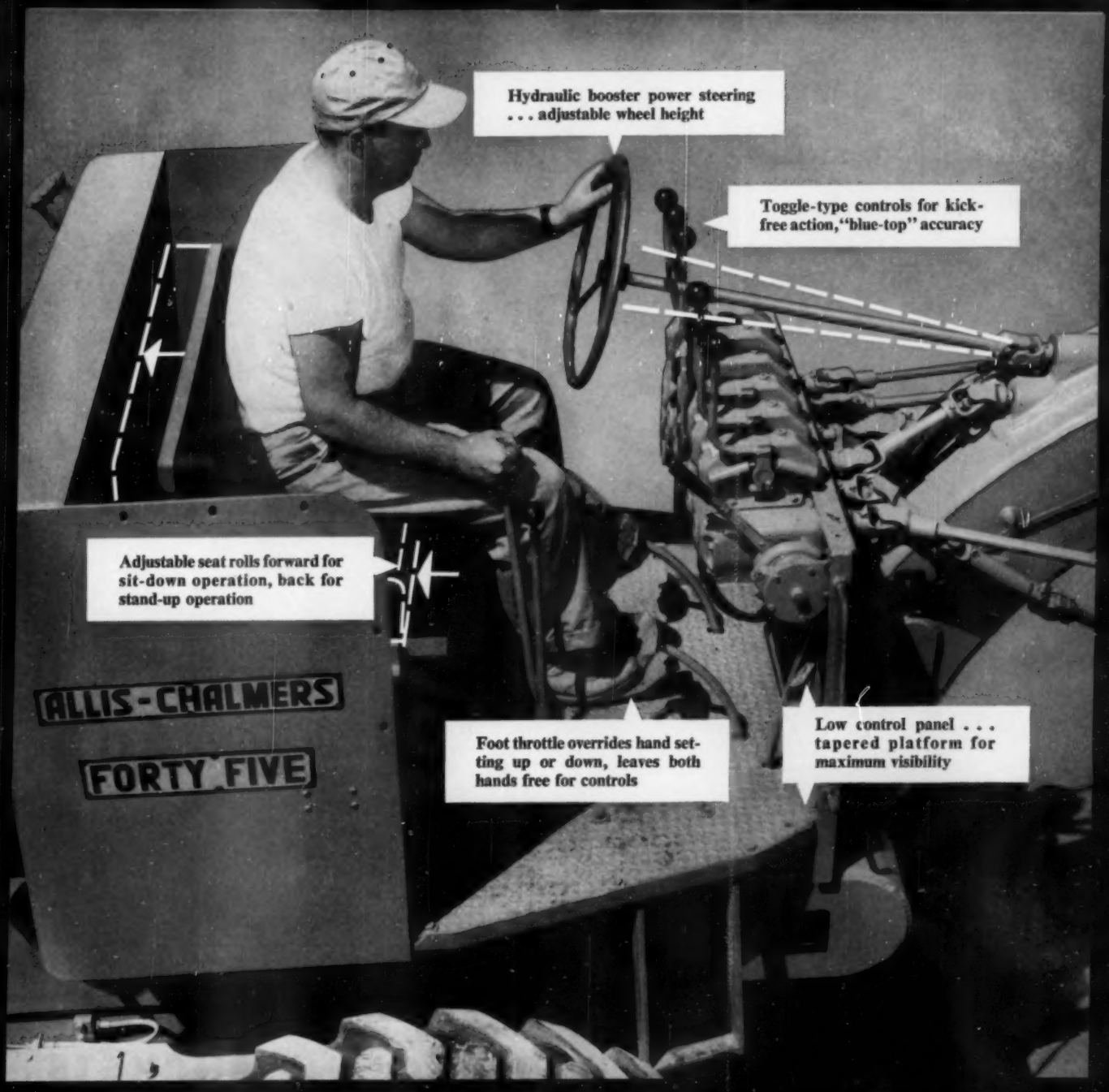
Content: A 24-page illustrated booklet gives details of a cost-free service, on problems involving fuels and lubricants, which is available to industrial and commercial users from Gulf Oil. Gulf's service is specially aimed at firms engaged in manufacturing, mining, quarrying, construction, transportation (including truck and fleet operations), communications and other businesses. Ask for Petroengineering Service booklet.

Where to get: Gulf Oil Corp., 1822 Gulf Bldg., Pittsburgh 30, Pa.

Subject: **Contractors' Pump Line**

Content: A reference chart, enabling contractors and builders to quickly spot the type of pump best suited to specific construction jobs, is one of the features of a new catalog bulletin prepared by the engineering staff of Barnes Mfg. Co. The handy "at-a-glance" chart lists in vertical columns such pumping applications as dewatering, sprinkling, equipment cleaning, tunneling, gravel washing, sewer lines, dam building, etc. Typical users of the pumps, including various types of contractors, mines, utilities and general construction firms, are tabbed horizontally. Numbers appearing under these columns refer to various types of Barnes pumps, recommended for the use given, which are described and correspondingly numbered on the opposite page. The pumps illustrated include engine-driven, electric and universal driven self-primers, portable, diaphragm, and standard centrifugal pumps. Capacities of the pumps cover up to 90,000 gph and heads up to 375 feet.

Where to get: Barnes Mfg. Co., Mansfield, Ohio.

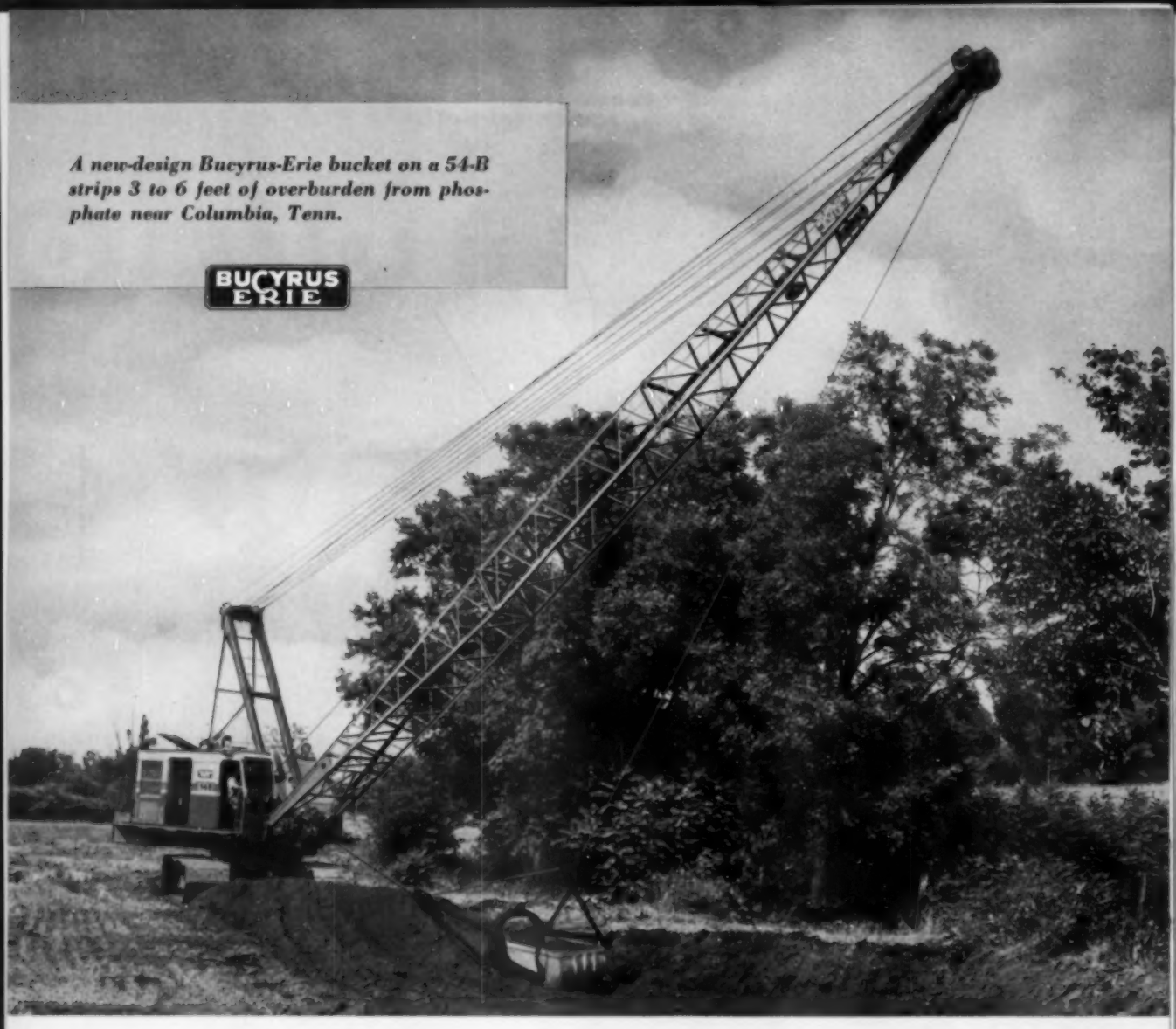

Hydraulic booster power steering . . . adjustable wheel height
Toggle-type controls for kick-free action, "blue-top" accuracy
Adjustable seat rolls forward for sit-down operation, back for stand-up operation
ALLIS-CHALMERS
FORTY FIVE
Foot throttle overrides hand setting up or down, leaves both hands free for controls
Low control panel . . . tapered platform for maximum visibility

FIVE WAYS YOU CAN BOOST GRADER PRODUCTION

. . . through operator comfort and control!

Features like these make satisfied operators . . . mean more production for you. They're yours in an Allis-Chalmers FORTY FIVE—120 brake hp, 23,800 lb. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*



A new-design Bucyrus-Erie bucket on a 54-B strips 3 to 6 feet of overburden from phosphate near Columbia, Tenn.

Designed to Outstrip--Built to Outlast

BUCYRUS-ERIE NEW DRAGLINE BUCKETS

Big dragline output comes more easily when you are swinging an *all-new* Bucyrus-Erie bucket. Its weight is correctly balanced and teeth properly pitched to speed penetration of the cutting edge and thin "slicing-action" lip. Its tapered basket fills fast. Precise flaring and accurate balance minimize bobbing and spilling. Clean inside design of the basket and extra high arch assure clean, fast dumping.

These new buckets are made of BECOLOY, a new steel developed by Bucyrus-Erie metallurgists. BECOLOY has high impact and shock resistance even at low temperatures. Its great strength per pound lets you swing more payload, less deadweight every shift. Maintenance costs are low since BECOLOY can be cut with an acetylene torch and is readily weldable.

Bucyrus-Erie dragline buckets are available in a wide range of sizes for light, medium or heavy-duty service . . . with solid or perforated baskets. Call on your Bucyrus-Erie distributor . . . he'll gladly recommend the right bucket for your dragline and specific use. 25R57C

BUCYRUS-ERIE COMPANY · South Milwaukee · Wisconsin

"ELEPHANT HIDE" FOR HEAVY EQUIPMENT

Cut Maintenance Costs With Robeson Rust-Inhibitor Primer Paint and Heavy-Duty Enamel

Five years of successful testing have proven these paints save Time, Money, Equipment.

The PRIMER gives excellent rust-resistance, is fast-drying (30-40 minutes) and forms an excellent surface for applying the Enamel. It is abrasion-resistant. Can also be used on Marine and floating equipment.

The ENAMEL is grease and oil-resistant, gives high coverage and excellent color retention. Can be applied with brush or spray gun. 12 high gloss colors. Only one Primer and one Enamel coat needed.

ONE USER STATES* . . . "Your Rust-Inhibitor Primer proven very satisfactory in preventing corrosion. . . . Your Enamel doing satisfactory job in hiding and making good color as well as very favorable abrasion-resistance. . . . Easy to apply . . . great savings in time necessary to paint. . . . We do not hesitate to recommend both." (*Name on request)

Also manufacturers of ROBESON PRESERVO, the easily applied liquid which makes tarps water, weather and mildew resistant and doubles the life of all canvas.

Why not learn today how these great products can save YOU money by writing

ROBESON PRESERVO CO. — 161 Merchant St. — PORT HURON, MICH.

Quality Products For 60 Years

Notes from the Manufacturers

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has established a new wholly-owned subsidiary in Australia, the Allis-Chalmers Australia Pty. Ltd., and through it has purchased the assets of Thomas C. Pollard Pty. Ltd., Newcastle. The plant will continue to make motor graders, as it has done previously under license from Allis-Chalmers, and will expand production to other construction machinery. Land has been purchased for expansion. Allis-Chalmers has appointed Wallace Collett as product sales manager, material handling department, Tractor Group.

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed J. V. S. Norton as assistant export sales manager. He had worked in Bucyrus-Erie's New York export sales department office since joining the company in 1945. Norton has been associated with the mining industry since 1927, when he completed an engineering course at Tufts University. During World War II, he served as a "dollar-a-year" consultant with the Mining Division of the War Production Board. Dean Calland has been appointed as a sales representative in Bucyrus-Erie's western sales district. His offices will be with Road Machinery Co., a Bucyrus-Erie excavator distributor in Phoenix, Ariz., and will report to Bucyrus-Erie's western district office at South San Francisco, Calif.

Detroit Diesel Engine Div., General Motors Corp., Detroit 28, Mich., has appointed Western Engine Co. as distributor of the division's line of two-cycle diesels in the Chicago and northern Illinois area. The distributor is a new corporation formed for the sale and service of industrial and marine engines, exclusively. It is located at 7122 Ogden Ave., Berwyn, Ill., where parts and service facilities have been established. Henry C. Grebe Co., Inc., Chicago, will continue as dealer for Detroit Diesel marine products under the new distributor.

Eimco Corp., Salt Lake City, Utah, has named Kenneth D. (Ken) Lloyd as intermountain field service engineer for the model 105 tractor division. He will serve as factory service representative in Utah, Idaho, Montana, Wyoming, Colorado, Nevada and Arizona. Eimco has named Northern Supply Co., Inc., Anchorage, as its distributor for Alaska. Northern Supply will distribute the entire line of Eimco products, including underground mining machinery and heavy-duty tractors for surface construction.

L. B. Foster Co., Pittsburgh, Pa., has appointed Robert F. Crawford as a specialist in pipe sales for its Pittsburgh office. The action coincides with the addition of stainless pipe, alloy pipe and valves to Foster's line of pipe supplies and the company's expansion in the carbon pressure pipe and pipe fittings field.

Harnischfeger Corp., Milwaukee, Wis., has appointed Paul Jacobson as an excavator salesman for the Philadelphia (Pa.) office. He will work out of Washington, D. C., handling sales of all Construction and Mining Division products to both the commercial markets and federal agencies.

International Harvester Co., Chicago, Ill., has appointed Clarence A. Hubert as general manager of its Construction Equipment Division. He formerly was manager of engineering of the Farm Equipment Division. Hubert joined Harvester in 1937.

Thew Shovel Co., Lorain, Ohio, has appointed George E. Gunther, sales manager for Lorain shovels and cranes. Gunther will supervise district sales managers and the direction of sales activities with domestic distributors. He joined Thew in 1948 as a district sales manager and was appointed assistant sales manager in 1951.

Quoting H.E. (ACE) GREEN, tunnel superintendent: "EIMCO 105 Excavators with heft to dig fast and overhead discharge, are the fastest tunnel loaders I've worked with."

The project was organized on a two cycle, 24 hour timetable with two drill and two mucking shifts. Here, Eimco 105 and dump wagons wait out blasting operations.

Quoting J. E. R. WOOD, president, NORTHWOOD INC.: "The fact that we have four EIMCO 105's is proof we're sure they promote high tonnage production."

WILKES-BARRE, PA. - Operator JOSEPH WEIKEL of Pottsville, Pa., prepares to unleash the EIMCO 105 Excavator's tremendous digging power during Bear Creek Diversion Tunnel operations. His comment: "It's the digginest machine I've operated."

The 19' circular bore was blasted through 1,150 feet of rock by NORTHWOOD INC. U.S. Army engineers directed the project.

EIMCO 105 SAVES TIME MUCKING FOR TUNNEL DRIVERS

"SAVES MINUTES EVERY CYCLE." That's how AL AITKEN, V-P, NORTHWOOD INC., supervisor of Bear Creek Tunnel operations, describes the EIMCO 105 Excavator's performance.

Part of the $18 million Bear Creek Reservoir Project, this tunnel will be outlet channel for the 234' high earthen dam. NORTHWOOD, with main offices in Vancouver B.C., is one of the Continent's active tunnel drivers.

Equipped with 1½ yard excavating bucket, the EIMCO 105 loaded 100 cubic yards of material into dump wagons after each blast. Between 200 and 400 lbs. of dynamite, used in a 48-hole drilling and shooting pattern (usually fired in 10 stages of delay) produced an average advance of 7½' per round . . . 15' per day.

The tunnel was drilled to a bore size of 19' in the rough using 6 jack legs on a single deck jumbo. Concrete lining will reduce inside diameter to 16'. Six inch I-beam supports wedged tightly with wooden blocking are spaced every 4'. The EIMCO 105 now is taking up a 4' bottom left to provide flat surface for trucks.

NORTHWOOD'S high appraisal of the EIMCO 105 is duplicated often in field reports from tunnel projects and mines throughout the world.

With any attachment--Excavator, Front-End Loader, Bulldozer, Fork Lift, and others--EIMCO 105 owners get superior design . . performance speed and power . . . operating ease and economy . . . versatile maneuverability . . . dependable service under hard usage.

Plan now to learn why you can shade your next bid and still keep the profit by figuring earthmoving costs around the EIMCO 105.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash. Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B 265

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Bucyrus-Erie 200-W diesel dragline shipped in 1950; 125 ft. boom, 6 yd. heavy duty and 7 yd. light weight buckets; some spare parts included; good mechanical condition. Location Melbourne, Australia. Box 3682

PAGE 618 diesel dragline; 110' boom; 5-yd. Page bucket; 3-cyl. Page 12½x16 engine; entire machine completely rebuilt: $78,000. SUNBEAM COAL CORP., North Washington (Butler County) Pa.

Bucyrus-Erie Model 5-W Diesel dragline, 100' boom, 25' insert extension. Fairbanks-Morse main engine, auxiliary 100 HP Cummins for swing generator, includes two (2) Esco buckets, one five yard and one six yard. Owner using machine and can be inspected in actual operation, very good operating condition, located in Northern Illinois. Price including buckets and approximately $5000 worth of spares. $60,000 as is. Box 3716

2-W Monighan Walking-Type Dragline #492, 85' boom, 2-year old D-13000 Caterpillar diesel engine #4S685, 2-yard Hendrix bucket, 2½ yard Page bucket, some spare parts, fair operating condition. Box 3708

SMALL SHOVELS, CRANES, DRAGLINES—UP TO 2½ YDS.

One Bucyrus-Erie Model 41-B, 3 motor AC electric shovel, serial no. 10796, 1½-yd. dipper, cat-mounted, 26" treads; 22'6" boom, 15' handle; good operating condition. Many replacement parts for swing and crowd machinery recently installed or available. Located Mid-West.

One Bucyrus-Erie Model 52-B, Ward-Leonard electric shovel, serial no. 11395, equipped for 3 phase, 60 cycle, 440 volt operation; 2¼ cubic yard dipper, 30' boom, 18' handle; equipped with power boom hoist and electric light plant. Well maintained and in good operating condition. Caterpillar units recently overhauled. Located Mid-West. Box 3710

Koehring Model 303 Dragshovel ⅜-cu. yd. bucket with 24" crawlers and Buda gasoline engine. Good buy.

Bucyrus-Erie 15-B Comb ½-yd. backhoe and clamshell machine with Buda gasoline engine and electric starter.

S. M. CHRISTHILF & SON, INC.
Timonium Rd. & Harrisburg Expwy.
VAlley 5-5100 Timonium, Md.

Bucyrus-Erie 15-B dragline excavator with 30' boom, Cat diesel engine with electric starter, Unit 76 tractor type crawler mounting with 20" wide grousers, Unit 79c counterweight. Machine serial #115288, machine has been used 650 hours. Price f.o.b. Greensboro, N. C. $18,500

Northwest 25 shovel front with ¾-yd. dipper. Price f.o.b. Greensboro, N. C. $1,500

Osgood Model 200 crane, gas engine. Price f.o.b. Greenville, N. C. $4,000

Northwest 25 combination dragline, clamshell shovel with Murphy diesel engine, serial #14716 .....$14,000

Jaeger 600' compressor with Murphy diesel engine, on 4 pneumatic tires. Price f.o.b. Greensboro, N. C. $5,500

E. F. CRAVEN COMPANY
Greensboro, N. C.

SMALL SHOVELS, CRANES, DRAGLINES — UP to 2½ YDS.

FOR SALE

DRAGLINES AND CRANES

2400 Lima Dragline, 130', 5-yd.
1201 Lima Dragline, 85', 3-yd.
955 P&H Dragline, 90', 2½-yd.
K-595 Link Belt Drag, 75', 2½-yd.
3500 Manitowoc Drag, 85', 2½-yd.
903 Osgood Dragline, 70', 2-yd.
802 and 604 Lima Cranes
3000-B & 3500 Manitowoc Cranes

SHOVELS AND COMBINATIONS

88-B Bucyrus-Erie 4-yd. Shovel & Drag
1055 P&H 3½-yd. Standard Shovel
1201 Lima 3½-yd. Standard Shovel
1201 Lima Combination Shovel-Crane
54-B Bucyrus-Erie Dragline-Crane
51-B Bucyrus-Erie Shovel-Dragline
22-B Bucyrus-Erie Shovel-Crane
25 Northwest Combination Shovel-Drag
80-D Northwest 2½-yd. Shovel
955 P&H 2½-yd. Standard Shovel
Unit 1020 ¾-yd. Shovel

TRUCK CRANES, EUCLIDS, DRILLS, Etc.

Bay City, Lorain, P&H, Northwest and Osgood Truck Cranes
Euclid Trucks: 27FD, 86FD, 2FD, 82FD, 36FD, 8TD, 63TD, 59TD, 60TD, 4-FFD
600 Reich Heavy Truck-Mounted Rotary Air Drills
58-BH Joy Champion Rotary Air Drill
42-T, 29-T and 27-T Well Drills
Davey Rotary Truck Air Drills
Mayhew Rotary Truck Air Drills
Portadrill Truck Mounted Air Drills
Garwood, LeTourneau, Caterpillar, Euclid and Bucyrus-Erie Scrapers
Huber 3-5 ton Tandem Roller
Buffalo-Springfield 10-ton Roller
International Bulldozers
Caterpillar & Allis-Chalmers Dozers, Front End Loaders, Graders
Shovel, Drag, Crane & Backhoe Attach., Drag & Dipper Buckets for most makes and models.

FRANK SWABB
EQUIPMENT CO., INC.
313 Hazleton Nat'l Bank Building
Hazleton, Pa. GLadstone 5-3658

Manitowoc Model 3500—Ship 1950 Caterpillar D-17000 Engine, 90' Boom with Pendant Suspension, Fairleads and Max. Counterweight. Located Toledo, Ohio. Price: $40,000 F.O.B. cars. Box 3714

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Lorain L-80J 1¼-yd. shovel, serial 23550 (1953) with Cat D-337 and fluid coupling; located in Denver, Colo.; good condition.

Lima 604 1½-yd. shovel, serial 324171 (1949) with air control and Cummins diesel engine; located in Casper, Wyo.; very good condition.

Bucyrus-Erie 38-B 1½-yd. dragline, less bucket, serial 90608 (1952) with Cat D-13000 diesel engine, 33" tracks, 55' boom, 6000 lb. extra cwt. and wired for lights; located in Denver, Colo.; good condition.

Parson model 310 trenchliner, serial 2102 (1950) with Cat D-8800 diesel engine, equipped with 24" buckets; located in Denver, Colo.; good condition.

Lorain TL-25 ¾-yd. dragline and hoe, serial 22976 (1953) with ¾-yd. bucket and Cat D-315 diesel engine; located in Denver, Colo.; good condition.

THE COLORADO BUILDERS' SUPPLY CO.
1534 Blake Street WEst 5-3571
Denver, Colorado

Bucyrus-Erie Model H-2 Hydrocrane, S.N. 33. Machine was built in 1946, is a crane only equipped with boom which telescopes hyraulically from 16' to 22'. Machine is mounted on 1½-ton 1946 Ford truck equipped with 7:50x20 tires. This machine was converted with three modern Blackhawk Model P237 pumps. Machine is available for inspection at the yard of James W. Bell Co., Inc., Cedar Rapids, Iowa.

SHOVELS — CRANES — BACKHOES

Bucyrus-Erie Model 29-B, 1-cu. yd. shovel with 45' boom, fairleads; powered by Caterpillar diesel engine; operating condition.
F.O.B. Louisville, Ky. $4,950

Bucyrus-Erie Model 10-B, ¾-cu. yd. backhoe, crawler mounted, gasoline engine; perfect condition—less than two years' use.
F.O.B. Louisville, Ky. $9,800

"QUICK-WAY" Model L, ½-cu. yd. shovel and 35' boom for dragline, powered by International UD9 diesel engine, mounted on a White half-track, excellent operating condition, engine recently overhauled.
F.O.B. Louisville, Ky. $7,000

Bucyrus-Erie Model 15-B, ½-cu. yd. backhoe on crawlers, powered by International UD350 diesel engine, perfect operating condition.
F.O.B. Louisville, Ky. $11,200

Bucyrus-Erie Model 22-B, ¾-cu. yd. shovel, crawler mounted, powered by International UD14A diesel engine, a late 1953 model, good operating condition.
F.O.B. Louisville, Ky. $15,500

Shield Bantam Model M49, ⅛-yd. capacity backhoe, powered by LeRoi gasoline engine, equipped with crane boom, mounted on a White (army surplus) halftrack.
F.O.B. Louisville, Ky. $7,500

Unit Model 514, ½-yd. shovel, powered by Chrysler C-36 gasoline engine.
F.O.B. Mount Vernon, Ill. $3,500

Koehring Model 304, ¾-yd. backhoe, crawler mounted, powered by Case gasoline engine.
F.O.B. Evansville, Ind. $9,500

Shovel Front for Bucyrus-Erie 10-B, ⅜-yd.
F.O.B. Louisville, Ky. $850

Shovel Front for Bucyrus-Erie 15-B, ½-cu. yd.
F.O.B. Louisville, Ky. $1,275

Dragline equipment, including 35' boom for Bucyrus-Erie 22-B.
F.O.B. Evansville, Ind. $1,250

BRANDEIS MACHINERY & SUPPLY CO.
Write—Wire—Phone
L. L. Freeman P. O. Box 27, Evansville, Ind. HArrison 3-4491
Jim Waddell P. O. Box 1705, Louisville 1, Ky. MElrose 7-4741

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

BUCYRUS-ERIE 54-B diesel combination standard shovel, crane & dragline; excellent condition: $27,500; will sell shovel front separately $5,000. SUNBEAM COAL CORP., North Washington (Butler County) Pa.

2-Yd. MODEL 820 LORAIN CRAWLER CRANE equipped with 100′ boom, Cat diesel engine. Entire machine in very good working condition and is available immediately; located in Milwaukee.

2-Yd. MODEL 820 LORAIN CRAWLER CRANE-SHOVEL COMBINATION; equipped with Cat D-13000 diesel engine, standard crawlers, 70′ boom, fairlead, maximum counterweight, new boom and like-new shovel attachment. Good condition; located at Milwaukee; available immediately.

1½-Yd. KOEHRING MODEL 605 CRANE-HOE COMBINATION; Cat D-13000 diesel engine, 60′ boom, new hoe attachment. Excellent condition. Call for location to inspect.

1¼-Yd. MODEL 33-B BUCYRUS-ERIE ERECTION CRANE with 100′ boom and jib, independent boom hoist, gas power. Very good condition; will be available late in June. Priced right for a big machine.

1-Yd. MODEL LS-90 LINK-BELT SHOVEL, Waukesha gas power; entire unit in like-new condition. Priced at about half of new replacement cost.

¾-Yd. MODEL 25 NORTHWEST CRANE-SHOVEL COMBINATION, equipped with Cat. D-4600 diesel engine, 45′ boom, tagline reel, fairlead. Excellent condition. Located at our Milwaukee yard.

½-Yd. UNIT CRAWLER-MOUNTED DRAG-SHOVEL, equipped with Chrysler Industrial gas engine. Fair condition and priced to sell. See at our yard.

TD-6 INTERNATIONAL WITH ½-YD. WAGNER FRONT END LOADER; like-new condition; used only 200 hours. Only $3,750.

OFFERED SUBJECT TO PRIOR SALE!!
CALL * WRITE *** PHONE**

J. P. WAITE CONSTRUCTION CO.
3308 West Pierce St. Milwaukee 15, Wis.
Phone: EVergreen 4-1900

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

LORAIN Truck Crane Model 414, 20-ton cap., gas engine, 40′ boom, Rudomatic tagline, outriggers and screw jacks, mtd. on factory carrier, 1950 machine in excellent condition $18,000

LORAIN Truck Crane Model L41, with gas engine, 50′ boom, 20′ jib, mtd. on factory carrier, outriggers and screw jacks, excellent condition $18,000

LORAIN Truck Crane Model L41, ¾-yd. with 30′ boom, clamshell bucket, Rudomatic tagline, Waukesha gas engine, mtd. on Brockway 6x6 carrier, operating condition $10,000

LIMA Paymaster Truck Crane Model E34, ¾-yd., with 35′ boom, Buda gas engine, mtd. on Brockway 6x6 truck carrier. $13,000

BUCYRUS-ERIE Model 15-B Dragshovel, crawler mtd., ½-yd., Waukesha gas engine, electric starter $7,000

5 ALLIS-CHALMERS Model TS300 Motor Scrapers, 18-yd., powered by Cummins diesel engines, good condition..EACH $12,000

Subject to Inspection and Prior Sale

H. O. PENN MACHINERY CO., INC.
140th St. & East River New York 54, N. Y.
Phone CYpress 2-4800

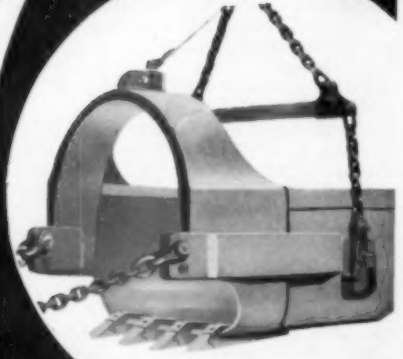
MISCELLANEOUS EQUIPMENT

Trench hoe—Shovel Front for Osgood 200. Practically new .....$500 each
Pile driving leads, hammer, etc. $400
1947 GMC, 623 Tractor and Jahn 20-ton drop center lowboy, rough but serviceable. Price $1,000

KIRKPATRICK CONSTRUCTION CORP.
P. O. Box 350 Hopkinsville, Kentucky

FOR 50 YEARS...
Finest in the Field!

Ask the contractors who use the Omaha Dragline Buckets. Learn how its wedge shape makes easier loading and emptying...its perfect balance for smoother carrying and dumping . . . its smoother interior, high arch, continuous lip makes it your best buy. Extra strength is built in at every point of strain. *Strike pay dirt now!* Complete information and specifications await your letter.



DRAKE-WILLIAMS MOUNT
• OMAHA, NEBR.

OMAHA
DRAGLINE BUCKETS

MISCELLANEOUS EQUIPMENT

BUDA MODEL 6B-273 GASOLINE ENGINE complete with radiator-clutch, pulley-starter and generator. $250.

FORD MODEL JD-1025 GASOLINE ENGINE with radiator-flywheel, ring gear and starter. $200.

***ALL PRICES—**
F.O.B. SOUTH MILWAUKEE, WISCONSIN

BUCYRUS-ERIE COMPANY
South Milwaukee, Wis.

BUDA 6DC-1879, Serial No. 3081, in running condition with gas starting engine, twin-disc clutch, base, removed from Bucyrus-Erie model 54-B.

CUMMINS DIESEL OF WISCONSIN, INC.
1921 S. Highway 100 Milwaukee 19, Wis.
Phone Lincoln 3-3160 or 3-3161

Shovel front for Bucyrus-Erie 22-B, complete with bucket and all necessary chains and parts for installation. Absolutely perfect because it has never been used. Only $2950.

CONTRACTORS SUPPLY
630 E. 18th St. Kansas City, Mo.

-:- SHOVELS FOR SALE -:-

2—Model 54-B Bucyrus-Erie 2½-yd. shovels, powered by Buda model 6DC-1879 diesel engines, with light plants.
(1) New 1947—F.O.B. The Dalles, Ore..$34,000
(1) New 1949—F.O.B. The Dalles, Ore..$35,000

Write for Latest Equipment For Sale Bulletin
GUY F. ATKINSON COMPANY
10 W. Orange Ave. So. San Francisco, Calif.
Phone: PLaza 6-0300, Ext. 125

Shovel front for Bucyrus-Erie 22-B, complete with bucket and all necessary chains and parts for installation. Absolutely perfect because it has never been used. Only $2,950.
MIDLAND MACHINERY COMPANY, St. Joseph, Mo.

1—Model No. 12 Bit Sharpener #26863 complete (except fire brick) for sharpening 6″ and 9″ bits, including heating and tempering furnaces, bit crane and hoist, ram dies, radial hammers and anvils, blowers and motors, bit quenching tank and bit rack.
F.O.B. Cars Pittston, Pa. $6,000
Box 3713

New 18″ dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 van runner; spare liners Box 3696

FOR SALE

Austin-Western Badger Shovel, ½-yard. Excellent condition, Diesel engine, electric starter, 14″ track.

KENTUCKY CLAY MINING CO.
Mayfield, Kentucky

Model 27-T blast hole drill, serial No. 18269, Waukesha gasoline power, crawler-mounted, 33′ one-piece all-steel derrick complete with tools in good working order. Located in Missouri. Priced to sell. Box 3718

ONE—2¼-YD. COAL LOADING DIPPER, NEW FOR 38-B. LOCATED NEAR PITTSBURGH. $2500.
BOX 3720

Model 27-T blast hole drill, serial No. 19628, Waukesha gasoline power, crawler-mounted, 33′ one-piece all-steel derrick complete with tools in good working order. Located in Missouri. Priced to sell. Box 3719

EQUIPMENT WANTED

1½ or 1¾-yd. UPPER WORKS ONLY for mounting on truck. State make, model, age and condition. Write Jim Waddell, P. O. Box 1705, Louisville 1, Ky.

SAUERMAN CABLEWAY EXCAVATOR OR POWER DRAG SCRAPER with hoist. Contact me if you have or know where one is any size one to ten yard capacity. For use on Placer Gold operation. Write EARL A. DILLON, Three Rivers, Texas.

Good used 5½ or 6-cu. yd. medium weight dragline bucket; we will buy this outright or will trade good 7-cu. yd. medium weight dragline bucket. Box 3721

Big trucks pay off on the big jobs!

Competitive operation on today's big yardage jobs calls for big dumpers that can keep tight schedules—especially when you're running a shovel that makes a 30-ton load in three or four passes. That's why so many operators are turning to Mack. For Mack gives them the toughest and most economical off-highway dumpers, as well as a large selection of competitively priced units to choose from—four basic units with a wide selection of engines, transmissions and converters... from four-wheelers with a 15-ton rated capacity to six-wheelers with a 34-ton rated capacity.

Here are some of the exclusive Mack features—wide selection of Mack or stock diesels ranging from 170 to 400 hp, each delivering maximum torque at low r.p.m.... superior Mack transmissions with two-speed compound or torque converter . . . planetary gear reduction in rear-axle wheel hubs for smooth power transfer without excessively large gears in the carriers . . . the exclusive Mack Balanced Bogie with Power Divider, the four-wheel, rear-axle drive that delivers maximum power to the wheels with traction . . . many models available from stock, the units you want with the engines and transmissions or converters you need supplied upon gratifyingly short notice.

Why not investigate the large-capacity economy afforded by the complete line of Mack off-highway dumpers? Invite your Mack representative to give you full details and specifications. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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MACK
first name for
TRUCKS

How to put limestone and gumbo in their place

THIS is heavy going on a new section of four-lane U. S. 80 just east of Ranger, Texas. Collins Construction Co. of Austin put in 7.8 miles here and they handled 395,000 yards of material doing it. A lot of that was rock. And a lot was limestone and gumbo.

For this sort of heavy grading, Collins called in their CAT* No. 12 Motor Grader. "Finest all-around grader I ever saw," says veteran operator V. W. Nichols.

Notice that operator Nichols sits down to handle his No. 12, even in rough stretches like this. If an operator has to stand to see his work, he tires much quicker, no matter how good he is. The operator of a No. 12 enjoys the convenience of in-cab starting, too, and power steering, and the exclusive Caterpillar accelerator-decelerator. Most of all, he enjoys the assurance he's at the controls of a tough, reliable machine that's *built to do the hard work.*

Backbone of the No. 12 is the strongest frame in any motor grader now on the market. Special channels make it that way. Box section circles increase its durability, as do its box-type drawbars. And the engine is of the same hardy breed—clutch, transmission, final drive are built to take heavy motor grader service.

Other features help explain the No. 12's popularity with operators and owners, too. Fast, accurate mechanical controls. Anti-creep brakes. Blade maneuverability that lets you swing from ditch cut to bank cut in less than a minute without adjusting links. Your Caterpillar Dealer will give you full details—and a demonstration, any time. He's ready with expert service, also—and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

WANTED—THE HARD WORK